American Gas Association MONTHLY

Convention Meets in New York

Market Analysis Brings Sales

Your Stake in Industrial Gas

Gas Hydrate Field Practices

Home Service Helps Gas Sales

September 1939

VOLUME XXI NUMBER 9

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American Gas Association MONTHLY

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Proximity to the New York World's Fair where gas has scored a tremendous victory in competition with other fuels takes this year's convention out of the beaten path. Add to that a program which encompasses startling developments and you have reason enough to make immediate reservations for your stay in New York the week of October 9. . . . As a national expert in taking the guesswork out of sales, we present F. X. Mettenet whose market surveys have been the talk of the industry. Take a tip from him and explore the possibilities, and limits, of your market. . . . An incorrigible optimist and a sound realist, Frank Trembly further states the case for industrial gas and ties it up with the activities of the Industrial Gas Section. It's good reading and stimulates the imagination. . . . That gas hydrate study ably conducted by Messrs. Deaton and Frost of the Bureau of Mines is vital to the natural gas industry. The paper herein presented brings the results up-to-date. . . . Mr. Rosenkrans carries the torch for Home Service, and not because he likes the ladies. Read this interesting account of his company's experience which led to expanision of this activity.

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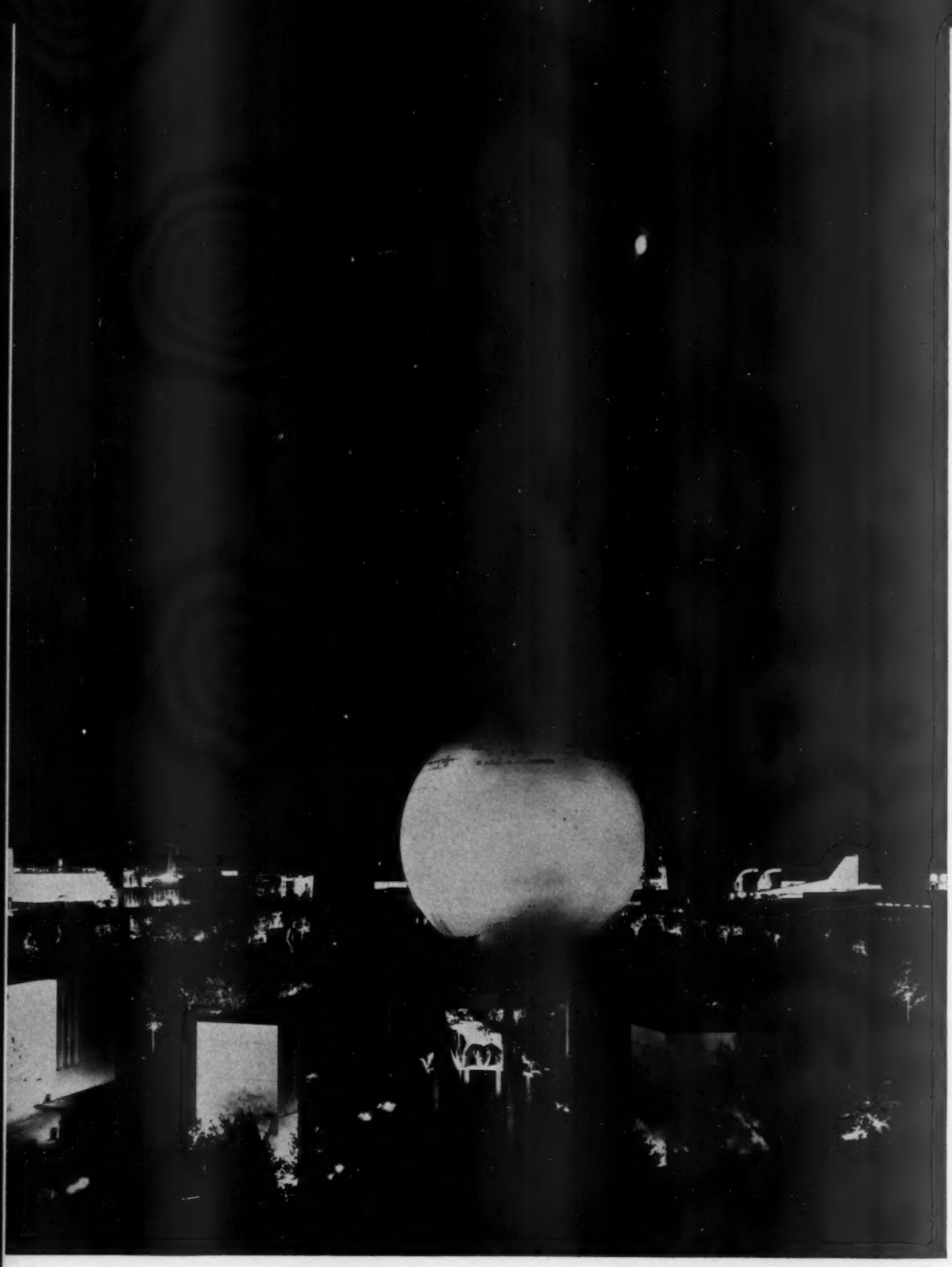


Night view of the New York World's Fair which thousands of gas men will see during the annual A. G. A. convention, October 9-12

American Gas Association MONTHLY

JAMES M. BEALL, *Editor*

YOUR CONVENTION
. . . A Double-Barreled Opportunity

WITH the New York World's Fair and its gas features a major attraction, the twenty-first annual convention of the American Gas Association promises to be unique in the history of the gas industry. It will be staged October 9-12 at the Hotel Pennsylvania, New York, and the program is being shaped to give delegates ample opportunity to see the manifold uses of gas in the World of Tomorrow.

While the story of gas at the Fair has been told in the MONTHLY and the gas trade papers, the full significance of the achievement of gas in dominating this great international exposition may be grasped from the following facts: More than 87 per cent of all the buildings occupied by the 211 exhibitors use 3,249 separate pieces of gas-fired equipment consuming 65,000,000 cubic feet of metered city gas each month.

•

These uses vary from prosaic jobs to applications never before attempted—all of which demonstrate the versatility, flexibility and practicality of gas under severe operating conditions. As a proving ground for gas fuel the Fair affords a splendid promotional asset. The list of firms using gas for various purposes in their exhibits reads like a "Who's Who in American Industry." Delegates to the convention will be inspired by first-hand views of these applications. They cannot help but carry home renewed confidence in a fuel which performs in this superlative fashion.

The management of the New York World's Fair has designated Monday, October 9, the opening day of the convention, as Gas Industry Day at the Fair. A special program for visiting delegates is being arranged for that day.

Even without the Fair, New York City offers many attractions to the visiting gas man. Its theatres, museums, parks, buildings, are justly famous and its industries are among the most efficient in the world. Many will wish to take advantage of the convention location in this densely populated area to view the immense facilities and sales organizations of the Consolidated Edison Company of New York, Inc., The Brooklyn Union Gas Co., Public Service Electric & Gas Co., The Brooklyn Borough Gas Co., Kings County Lighting Co., and other nearby gas companies.

The framework of a strong program of wide appeal has been prepared for the general sessions by an able program committee headed by George F. Mitchell, president of The Peoples Gas Light and Coke Company, Chicago. Three consecutive morning sessions will be held beginning on Tuesday of convention week. These sessions are devoted to broad problems of national interest to the gas industry, while sectional meetings are confined to specialized subjects. The latter meetings are being curtailed somewhat to allow more time for those who wish to visit the Fair.

Conrad N. Lauer, president of the American Gas Association and president of The Philadelphia Gas Works Co., will open the first general session with an address on the state of the gas industry. Mr. Lauer, who is a forceful speaker as well as an outstanding leader, is expected to set the keynote of the convention.

A featured speaker at the first meeting will be Thomas Henry Sanders, Professor of Accounting in the Graduate School of Business Administration, Harvard University, who will speak on "Reality in Accounting." As a past president of the National Association of Cost Accountants, author of various accounting books, and a recognized authority in his field, Professor Sanders' remarks on the complicated problems of public utility accounting as they exist today, are expected to be a valuable contribution to the industry.

•

Professor Sanders will urge accountants to rise above the technical and legalistic considerations with which their work is surrounded and endeavor to express the realities of the situation. From this point of view, he will discuss a number of problems which all companies must encounter, notably those connected with the capitalization of the com-

Conrad N. Lauer
President

Walter C. Beckjord
Vice-President

T. J. Strickler
Vice-President

Herman Russell

James F. Pollard

pany, such as capital surplus and earned surplus, no par stock, reacquired stock and stock dividends; reference will also be made to accounting for internal control or budgeting.

He will further discuss, from the same point of view, a number of the special accounting problems of public utilities, arising out of the conditions of public utility regulation.

An important part of the general sessions program will be devoted to advertising. James F. Pollard, president, Seattle Gas Company, and a firm believer in national advertising, will discuss this subject in an address entitled, "A Rock-Ribbed Foundation for Gas Industry Development." It was Mr. Pollard's eloquent plea for national advertising at the 1935 A. G. A. convention that definitely crystalized sentiment for the campaign, now in its fourth year and gaining immeasurable prestige for gas fuel. He continues to be in the front ranks of those who advocate more and better advertising in the gas industry.

Emphasis on Sales

Continued emphasis on sales makes this a vital subject in any industry and this is no less true of the gas industry. A leader in constructive sales thinking, A. F. Rice, manager of market development of the Southern California Gas Company, will make a forward-looking talk on "The Sales Outlook."

Mr. Rice's theme will be that, inherently, gas is replete with exciting, interest-arousing, respect-developing virtues—if appealingly interpreted. Its services can be made as desirable to people as appliance benefits. Therefore, he will urge, gas should be made a major part of the sales picture as well as the appliance.

In making his presentation, Mr. Rice will review current merchandising "appeal" and touch on the phenomenal development of gas appliances in recent years. He will pay particular attention to a new approach to the domestic mass market.

An authority in the field of marketing and sampling is being secured to bring the gas industry up-to-date on this indispensable part of any successful sales program. The fast-growing practice of sampling public opinion makes this a most significant topic.

Technical Developments

Switching to technical subjects, the convention will be privileged to hear one of the gas industry's most widely respected and broad-visioned executives—Herman Russell, president of the Rochester Gas & Electric Corp., and past president of the American Gas Association. Speaking on "Technical Developments and Their Effect on the Gas Industry," Mr. Russell will point out the technical improvements which have been made recently in methods of gas manufacture and distribution—natural and manufactured—and show how important these have been in lowering costs.

Mr. Russell will also show the advance made in domestic and industrial appliances and interpret their meaning to the progress of the gas industry. He is expected to indicate the need for developing new uses for gas and new products into which gas may be converted, thereby enlarging the field of the industry. In conclusion, Mr. Russell will make an appeal for industry support to an enlarged and comprehensive research program as being vital to the future of the gas industry.

The increasing importance of industrial and commercial uses of gas, which have grown by leaps and bounds, make their proper promotion a vital problem to the industry. This problem will be attacked by an executive of a gas company which has done an outstanding job in this field. The title of this paper will be, "Can Our Industry Advance by More Aggressive Industrial Gas Promotion?"

A notable part of the program will be the presentation of Association awards in recognition of exceptional achievement. These include the Charles A. Munroe Award, the American Gas Association Meritorious Service Medal, the Beal Medal and McCarter Awards.

One of the highlights of the general sessions will be an address by a nationally known utility executive on the present status of the natural gas industry. This is expected to include a summary of important recent developments and a forecast of the industry's future.

Public Relations Forum

The Natural Gas Section of the Association, under the chairmanship of Thomas R. Weymouth, vice-president of Columbia Gas & Electric Corp., New York, has arranged a most interesting program for Monday, October 9. The principal feature of this program is a public relations forum under the leadership of B. C. Adams, vice-president, The Gas Service Co., Kansas City, Mo. Such outstanding executives as E. M. Tharp, vice-president and general manager, The Ohio Fuel Gas Co., Columbus, Ohio; R. E. Fisher, vice-president, Pacific Gas & Electric Co., San Francisco, Calif.; and Charles Evans, Arkansas Power & Light Co., Pine Bluff, Arkansas, will participate. A lively skit will be given to demonstrate old and new ways of approaching the public.

Thomas H. Sanders

A. F. Rice

B. C. Adams

E. M. Tharp

R. E. Fisher

Condensed programs will be the order of the day for all of the sectional meetings but no important problems will be overlooked. The Commercial and Industrial Gas Sections both will confine their meetings to two days rather than three as has been the usual practice. These will be augmented by get-together luncheons and other features.

The popular Home Service Breakfast meeting will be held at the Hotel Pennsylvania, Wednesday at 8:30 A.M. This program, under the direction of Miss Gladys Price, of Los Angeles, chairman of the Home Service Committee, will consist of a series of two-minute talks on related home service topics.

The accountants are planning one regular session, Tuesday afternoon, which will be packed with timely papers and committee reports.

Wednesday has been set aside as an open day during which accounting delegates will have an opportunity to visit local utilities and exhibits at the World's Fair illustrating interesting accounting practices and developments in office lavor-saving devices. A booklet prepared by the Committee on Local Tours covering local points of interest will be forwarded to Accounting Section members in advance of the convention.

In addition, Wallace G. Murfit, of Philadelphia, chairman of the Luncheon Conference Committee, has arranged four luncheon meetings which will be held Thursday, covering the following subjects: Customer Relations, Credit and Collections, Customer Accounting, and General Accounting. It is planned that these meetings will be combination committee sessions and discussion clinics. More information on these meetings will be found in the Accounting Section of this issue.

Following are the tentative sectional programs:

NATURAL GAS SECTION

MONDAY, OCTOBER 9

10:00 A.M.

T. R. Weymouth

Presiding, THOMAS R. WEYMOUTH, *Chairman,* Natural Gas Section, American Gas Association; Vice-President, Columbia Gas & Electric Corp., New York, N. Y.

Remarks by the Chairman.

PUBLIC RELATIONS FORUM

Leader: B. C. ADAMS, Vice-President, The Gas Service Company, Kansas City, Missouri.

Subjects:

The Golden Rule in Business, MR. ADAMS.

Analyze, Organize and Deputize, E. M. THARP, Vice-President and General Manager, The Ohio Fuel Gas Company, Columbus, Ohio.

Humanizing An Organization, R. E. FISHER, Vice-President, Pacific Gas & Electric Company, San Francisco, California.

Good Will, A Priceless Asset, CHARLES EVANS, Arkansas Power & Light Company, Pine Bluff, Arkansas.

Skit—The Old Way—The New Way.

Election of Officers. Committee Reports.

Gas Industry Luncheon. (Speaker to be selected.)

Adjournment for Gas Industries Day activities at the World's Fair.

ACCOUNTING SECTION

TUESDAY, OCTOBER 10

2:00 P.M.

Address of Chairman, H. A. EHRMANN, Consolidated Edison Company of New York, Inc., New York, N. Y.

H. A. Ehrmann

Nominating Committee, D. H. MITCHELL, *Chairman,* Northern Indiana Public Service Company, Hammond, Ind.

Luncheon Conferences, W. G. MURFIT, *Chairman,* The Philadelphia Gas Works Company, Philadelphia, Pa.

Local Company Inspection Tours, M. T. CHANDLER, *Chairman,* Consolidated Edison Company of New York, Inc., New York, N. Y.

Accountancy by Edict, CHARLES B. COUCHMAN, Barrow, Wade, Guthrie and Company, New York, N. Y.

Property Records, O. H. RITENOUR, *Chairman,* Washington Gas Light Company, Washington, D. C.

PROGRESS REPORTS—ACCOUNTING COMMITTEES

Customer Accounting, H. E. CLIFF, *Chairman,* Public Service Electric and Gas Company, Newark, N. J.

General Accounting, H. C. MOORE, JR., *Chairman,* New England Gas & Electric Association, Cambridge, Mass.

Customer Relations, H. F. WILLIS, *Chairman,* The Peoples Gas Light and Coke Company, Chicago, Ill.

Uniform System of Accounts and Depreciation Accounting, H. C. HASBROUCK, *Chairman,* Utility Management Corporation, New York, N. Y.

THURSDAY, OCTOBER 12

ACCOUNTING SECTION LUNCHEON CONFERENCES

(See complete details on Page 314)

COMMERCIAL SECTION

TUESDAY, OCTOBER 10

12:30 P.M.

"GET-TOGETHER" BLUE PLATE LUNCHEON

(No Speakers)

F. X. Mettenet

Presiding, F. X. METTENET, The Peoples Gas Light & Coke Co., Chicago, Ill.

Address of Chairman, F. X. METTENET, Vice-President, The Peoples Gas Light & Coke Co., Chicago, Ill.

Report of Nominating Committee, HUGH CUTHRELL, *Chairman*, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Election of Officers.

What of Tomorrow, HUGH CUTHRELL, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Symposium on Gas in New Homes, J. P. LEINROTH, Public Service Electric & Gas Co., Newark, N. J.; H. VINTON POTTER, Oklahoma Natural Gas Co., Tulsa, Okla.; F. M. BANKS, Southern California Gas Co., Los Angeles, Calif.

Market Possibilities and Equipment Available for Summer Air Conditioning by Gas, A. W. LUNDSTRUM, Ebasco Services, Inc., New York, N. Y.

Gas for All Heating Purposes.

WEDNESDAY, OCTOBER 11

12:30 P.M.

"GET-TOGETHER" BLUE PLATE LUNCHEON

(No Speakers)

Presiding, DAVIS M. DEBARD, Stone and Webster Service Corp., New York, N. Y.

Reaching the Low Use Customer, HUDSON W. REED, Executive Vice-President, The Philadelphia Gas Works Co., Philadelphia, Pa.

Refrigeration, R. J. RUTHERFORD, Vice-President, Worcester Gas Light Co., Worcester, Mass.

Water Heating.

In the Mirror of Customer Opinion (CP Ranges), GLADYS PRICE, Southern California Gas Co., Los Angeles, Calif.

Objections and Refutations, R. S. AGEE, Sales Prom. Mgr., Association of Gas Appliance and Equipment Manufacturers, New York, N. Y.

Sales and Advertising.

INDUSTRIAL GAS SECTION

(Speakers will be announced later)

TUESDAY, OCTOBER 10

12:15 P.M.

THE INDUSTRIAL GAS LUNCHEON

Address by a prominent gas company executive

TUESDAY, OCTOBER 10

2:00 P.M.

F. H. Trembly, Jr.

Reasons Why Gas Is Forging Ahead in the Metals Field.

Beating Competition by Refining Industrial Gas Applications.

The Application of Gas to the Quick Drying of Printing Ink.

Successful Methods of Selling Standard, Rated Industrial Gas Furnaces.

Are You Taking Full Advantage of Your Industrial Gas Publicity?

WEDNESDAY, OCTOBER 11

2:00 P.M.

The Utilities and Manufacturers—A Team for Increased Sales.

Report of Committee on Nominations.

Election of Officers.

A Review of Progress in Certain Industrial Fields.

An Analysis of Gas at Work in the World of Tomorrow.

A Hotel Man Looks at Gas Service. (Address by prominent hotel executive.)

TECHNICAL SECTION

TUESDAY, OCTOBER 10

2:00 P.M.

F. M. Goodwin

Chairman's Opening Remarks, F. M. GOODWIN, Boston Consolidated Gas Co., Boston, Mass.

Report of Nominating Committee, J. V. POSTLES, *Chairman*, The Philadelphia Gas Works Co., Philadelphia, Pa.

Potentialities of Future Production Costs, L. J. WILLIEN, Public Utility Engineering & Service Corp., Chicago, Ill.

Load Factors and Increment Costs in Transmission and Distribution of Gas, Edward L. FISCHER, United Light & Power Service Co., Davenport, Iowa.

Gas at the Fairs, C. S. GOLDSMITH, The Brooklyn Union Gas Co., Brooklyn, N. Y., and R. S. FULLER, Pacific Gas and Electric Co., San Francisco, Cal.

WEDNESDAY, OCTOBER 11

2:00 P.M.

The Engineers of Tomorrow. (Speaker to be announced.)

Ten Years of Gas Dehydration, W. L. SHIVELY, Koppers Co., Pittsburgh, Pa.

Report of Gas Conditioning Committee, O. S. HAGERMAN, *Chairman*, Atlantic Seaboard Corporation, New York, N. Y.

Report of Committee on Organic Sulphur, R. E. KRUGER, *Chairman*, Rochester Gas & Electric Corporation, Rochester, N. Y.

Report of Gas Production Committee, F. B. PARKE, *Chairman*, The Brooklyn Union Gas Company, Brooklyn, N. Y.

Report of Distribution Committee, C. F. TURNER, *Chairman*, The East Ohio Gas Company, Cleveland, Ohio.

Report of Chemical Committee, E. M. BLISS, *Chairman*, Public Service Electric and Gas Company, Harrison, N. J.

Personnel Conference at A. G. A. Convention

W. N. Bissell

THE Committee on Personnel Practices of the Association will again hold a luncheon conference during the annual convention. This year it will be held in the Small Ballroom of the Hotel Pennsylvania, New York City, at 12:30 o'clock, Thursday, October 12. William N. Bissell of the Niagara Hudson Power Corporation, chairman of the committee, will preside.

The principal speaker at the conference will be J. Walter Dietz, vice-president in charge of the personnel division of the American Management Association and personnel manager of Western Electric Company's manufacturing department. Under the heading "Today's Trends in Industrial Relations," Mr. Dietz will explain the new emphasis that is being placed on the personnel problems of management. He is a member of the Federal Advisory Committee for the U. S. Employment Service and was recently appointed to an advisory committee formed to assist President Roosevelt's Committee on Civil Service Improvement.

Tickets for the luncheon will be $1.50 and should be obtained in advance from the American Gas Association, 420 Lexington Avenue, New York, N. Y.

Market Analysis . . . *The Highway to Greater Gas Sales*

EVER since evolution, working in mysterious ways its miracles to perform, brought forth the first sales manager, the question has always been, "How can we get bigger sales? How can we increase volume?"

Down through the ages as trade and commerce goes, this inquiry has been echoed and re-echoed so that it would be strange indeed if time had not produced a strange and bewildering variety of answers.

Answers that were good, answers that were bad. And, mark this too. The more involved and more complex these solutions became, the wider they generally were of the mark when put to actual test.

• Eliminate the guesswork in sales promotion by analyzing your market is Mr. Mettenet's timely advice to the gas industry. A consistent advocate of systematic fact-finding expeditions to establish definite sales objectives, he has directed large-scale market surveys in Chicago in recent years which have produced valuable information for his company and attracted nationwide interest.

• In this article, which is part of an address delivered at the Association's natural gas convention last May and previously at regional sales conferences, Mr. Mettenet explains his methods and cites specific examples from actual surveys. It merits careful attention from all sales-minded people.

By F. X. METTENET

Vice-President, The Peoples Gas Light and Coke Company, Chicago, Ill., and

Chairman, Commercial Section, American Gas Association

Recipe for Sales

Just as the simplest plays, *perfectly executed,* win more football games than "razzle dazzle," so too does the simplest approach to most business problems, including sales, produce the best results in the end.

What does that mean to the sales manager with a quota to make? What is the simplest, easiest approach to his job?

Here's one plain recipe which, it seems to me, goes straight to the point: "KNOW YOUR MARKETS. KNOW YOUR MEN."

But some may say: "Now there's a meaningless generality if I ever heard one." Let's analyze it and see.

No doubt everybody agrees that knowing one's market is fundamental, yet not everybody does much about it. In modern business practice, an efficient, creative selling job requires that a market study be made to determine the market potential for any given group of products.

Such a market study, carefully made, certainly will give the sales management definite information, making it possible to do these things:

1. To determine the market potential: who can buy, who can't.
2. To direct sales effort at this potential, not somewhere else.
3. To direct promotional activities at the potential.
4. To direct advertising.
5. To determine sales expectancy.
6. To obtain a valuable guide to rate making.
7. To help intelligent sales planning.

Each of the above points could be discussed at length, but they are generally self-explanatory and a few specific examples will serve to illustrate the types of information which will help achieve these results.

Example One. (Residential Heating Market in Chicago, single-family dwellings, central heating plants only)

Analysis of this market shows there are:

800,000 total residential customers
164,000 single-family dwellings of all classes
Only 143,000 single-family dwellings of all classes with central heating plants
Only 25,000 single-family dwellings with a value of $7,500 and up, or $50 or more per month rent.

The 800,000 figure, the 164,000 figure, even the 143,000 figure does not mean a thing at present as far as sales of gas central heating plants are concerned. Only the 25,000 figure is significant and even though that is the basic potential, it is subject to still further scrutiny.

There are now 12,000 of these 25,000 homes which already have gas central heating plants, so that saturation of the potential is 48% and the present net market is 13,000 homes.

For this 13,000 heating market, as for our other domestic business, we have the names and addresses of the prospects systematically arranged for campaigning, and while we do a minimum amount of general advertising to keep the idea of gas heat before the community at large, all our intensive canvassing, promotion and advertising is directed toward the much smaller but *actual* market.

Example Two. (Automatic Water Heating Market Study in Chicago)

There are 355,000 one- and two-family dwellings in Chicago.

After the low valuation or low rental dwellings have been eliminated leaving only dwellings worth $7,500 and up or renting for $50 and up (the classifications to which the bulk of our sales are made), a total of 118,000 remains.

Because 34,000 automatic gas water heaters already have been installed in Chicago, a 28.8% saturation already

TO HELP YOU IN SELLING Gas TO BUSINESS ENTERPRISE

• Data not available heretofore . . . an 8-page, 2-color, statistical analysis of the commanding role played by gas in the operation of the N. Y. World's Fair . . . a study of the 3,249 separate pieces of gas-fired equipment at work on the Fair Grounds in 437 locations (87.2% of all the buildings) . . . a complete tabulation of "who uses GAS for what" detailing every use of gas by each of 211 World's Fair exhibitors, concessionaires and operating units.

• A strong mailing piece you can use to court new non-residential gas load and equipment sales . . . a folder that will get reactions from all types of industrial and commercial customers.

• Every employee of your company should have one . . . and certainly every man who represents you to business people should carry a pack to discuss and leave with non-residential prospects.

• Here's real sales ammunition at a low price . . . only $3.00 per hundred copies . . . obtainable from the Publicity Committee, Industrial Gas Section, American Gas Association, 420 Lexington Avenue, New York City.

TOMORROW'S INDUSTRIAL AND COMMERCIAL FUEL

Gas AT WORK IN THE "WORLD OF TOMORROW"

[A Statistical Study by the American Gas Association]

has been achieved, leaving a net market of 84,000 homes.

Example Three. (Gas Refrigeration in Chicago)

There are 450,000 families in Chicago whose circumstances permit them to have automatic refrigeration. At present, 330,000 families have automatic refrigeration, creating a saturation of 73% and leaving a *new* market of 120,000 families.

A second factor onters here, of course—the replacement market. Our figures show that there are approximately 307,000 electric refrigerators in Chicago. Assuming an eight-year life for them, the yearly potential sales in the replacement market are 38,000.

Experience indicates that about five per cent of the *new* market of 120,000 or 6,000 can be sold each year. This 6,000 plus the 38,000 replacement market makes a total potential of 44,000.

Last year our gas refrigerator sales totaled 6,000. The effectiveness of that job, therefore, is as 6,000 is to 44,000 or 13%.

Example Four. (Chicago Gas Range Market)

In Chicago there are 800,000 families using gas ranges. Assuming the ideal condition of a 10% replacement each year based on a ten-year life for each range, the annual potential is 80,000 ranges.

A carefully made city-wide survey shows that in 1938 64,000 gas ranges were sold by all outlets. On the basis of present distribution, therefore, 80% of the ultimate range sales job is being done in Chicago, which gives us a rather definite indication of how much present efforts should be accelerated in our own sales effort, in dealer cooperation, in promotion and advertising.

Example Five. (New Home Market in Chicago)

Analyses of the various domestic gas markets as described above have been confined to existing dwellings.

While new building has lagged markedly in Chicago during the depression years, there was sufficient resumption of activity in this field during 1938 to follow closely.

During that period 975 new single-family dwellings were completed.

Gas equipment and appliances were installed as follows:

330 installed gas heat	39%
690 installed automatic gas water heaters	71%
124 installed gas refrigerators	13.7%
945 installed gas ranges	97%

While the over-all total is not great, the compilation of sales results is vitally significant because it indicates that that is the percentage we may expect multiplied ten fold with a resumption of building on a large scale. We see that ranges are running near a perfect score, that more intensive effort in refrigeration is necessary because of the greater competition. Our representation in home heating is rather robust, and so on. These are actual facts which we can digest when planning new sales, promotional and advertising activities.

Other Types of Surveys

Market analysis does not end with surveys which go no further than listing the quantities of potential buyers. Inquiry into typical families' buying habits, or even into habits which indirectly influence their buyer help round out the complete picture.

In our own case, the women of our Home Service organization, chatting with hundreds of housewives as they do each week, are able to conduct inquiries which guide us in our "sales talk," our promotion, our advertising.

For example, we were at one time uninformed as to how many women, particularly in a metropolitan area like Chicago where buying of commercially canned goods is greater than in the country, continued to can fruit and vegetables at home.

Systematic fact-finding revealed the following points:

38% do home canning in one form or another

62% do no canning, giving these reasons:
- 36% say family is too small
- 36% say home canning does not pay

Obtaining this information provided us with assurance that our Home Service girls in public appearances might very well demonstrate that home canning in many instances definitely does pay. Largely as a result of this survey, a manufacturer of glass canning jars is cooperating with us in an extensive series of cooking schools.

The following results obtained in other surveys also influenced our cooking school programs as well as the "slants" pursued in some of our advertising literature:

Use of Oven

16% use oven less than once a week
26% use oven once a week
24% use oven twice a week
28% use oven three or four times a week
6% use oven every day

The following percentages indicate the various degrees in which women use the broilers on their ranges:

39%—less than once a week
30%—once a week
17%—twice a week
10%—three to four times a week
4%—every day

Note that almost 40% use their broilers less than once a week—and yet broiled foods are among the most healthful and most delicious. Further inquiry indicated that many women just did not know *how* to broil, looked upon it as a trying, difficult job. And there was the cue for a forceful promotional message: dramatizing the advantages of the smokeless broiler on the modern gas ranges.

Fact-Finding Studies

Numerous other specific examples could be cited of "fact-finding expeditions" into the unexplored hinterlands of domestic market conditions, but the above, I believe, illustrate the point.

Still another type of information required to round out an adequate market survey is facts concerning the economic status of prospects. It is not enough to know how many possible prospects there are; knowledge of their purchasing power helps tell us whether they are *probable* prospects.

Such items as their apparent family income, the rent they pay, the valuation of their homes if they are realty owners—all these items obviously are fundamental. Few organizations have better access to credit information than public utility companies who number among their customers practically every family in a community. Real estate boards have full information on property appraisals and rental levels.

All these factors, it will be recalled, were used in defining our Chicago home heating market. Experience, unhappy experience in some cases, proved definitely that with economic conditions as they now are and as they have been for close to ten years, the satisfied gas heat customer will come from that group making $2,500 a year or more, paying $50 a month or more rent, or owning a home worth $7,500 or more. The $7,500 figure, I might say parenthetically, includes rather modest homes in Chicago because of high values of lots. In smaller communities, this figure would be considerably less.

And now to summarize briefly the whys and wherefores of market survey. How will market study increase sales?

It will do these things for the sales manager:

He knows *what* the market potential is.
He knows *where* the market potential is.
He can intelligently *plan salesman's territories.*
He can better interpret how much *each salesman should produce.*
He can better direct *selective selling.*
He can assign *fair quotas.*
He minimizes *guess work.*
He can intelligently direct *dealer* and *manufacturer promotion.*

It will give the advertising manager definite, objective information as to where to direct his advertising. If the appliance is one which only wealthier people can buy, he will place his newspaper copy in the more conservative paper which has the better following among such families. He will aim his direct mail at the better neighborhoods, not at the slums.

Market analysis is the "range finding" that enables management to lay down the barrage of sales, promotional and advertising effort where it is most apt to gain the objective.

Four Big Jobs Used in Australia

THE slogan featured in the gas industry's national advertising program, "Let Gas Do the Four Big Jobs—Cooking—Water Heating—Refrigeration—House Heating" is now appearing on gas company billboards in Melbourne, Australia, in this form:

"Gas Is Cheapest by Far for the Four Big Jobs—Cooking—Water Heating—Refrigeration—Healthy Warmth."

Reinforcements . . . . . .

Your Stake . . . *in the Industrial Gas Section's Activities*

By FRANK H. TREMBLY, JR.

The Philadelphia Gas Works Co., Philadelphia, Pa.

Chairman, Industrial Gas Section, American Gas Association

- **Herewith is presented the third in a series of articles by Mr. Trembly evaluating the industrial and commercial phases of the gas business. In the January issue of the MONTHLY (page 14), he discussed the general characteristics of the entire non-residential portion of our national gas sendout, while in February (page 53) he interpreted the commercial phases of the load as distinct from the strictly manufacturing or industrial.**
- **In the accompanying article, which was presented at the natural gas convention in May, Mr. Trembly outlines the activities of the Industrial Gas Section and examines the broader benefits to be derived from its functioning.**
- **Of particular interest is his discussion of the fundamental difference between natural and manufactured gas areas in their approach to industrial and commercial sales. Don't fail to read it!**

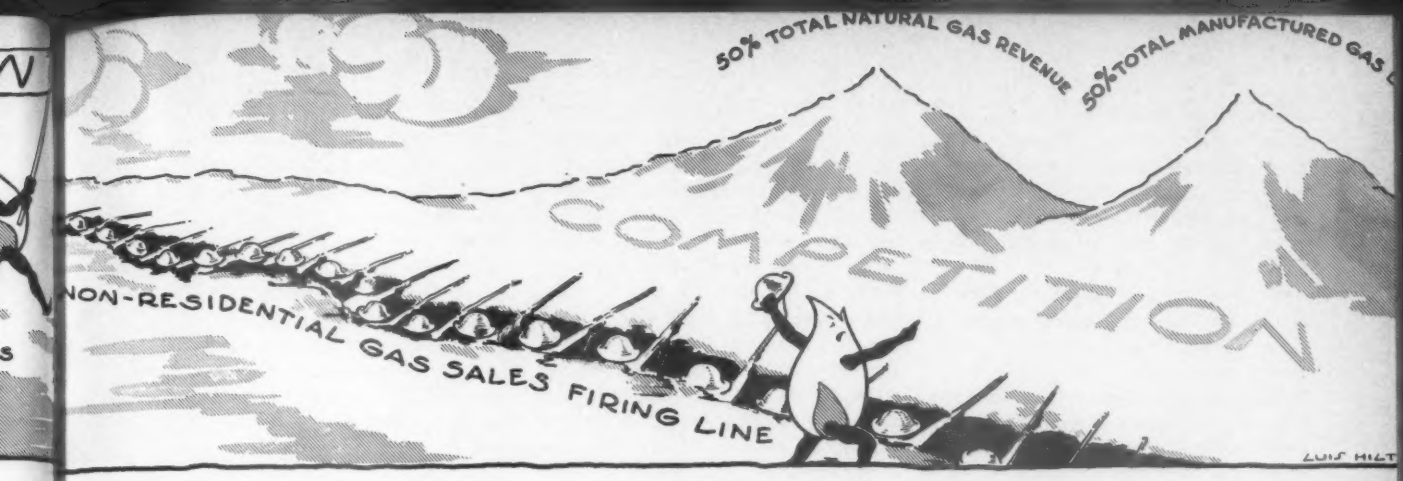
IT would appear to be carrying coals to Newcastle or, perhaps, bringing natural gas to Oklahoma, for me to dwell at great length upon the generally well known functions of the Industrial Gas Section. To keep the record straight, however, I will briefly outline the general activities of this section, and will discuss in greater detail, a larger responsibility which I believe the section has.

The Industrial Gas Section cooperates closely with the other sections, particularly with the Natural Gas Section. The activities of the section fall into three general classifications. The first is the administrative function that has to do with the general direction of the industrial activities of the Association and is represented largely by the Managing Committee of the section, the Advisory Committee of Past Chairmen and representatives of affiliated State and Regional Associations. This is a valuable adjunct to our activities as it provides an organization of experienced men to pass on the many questions regarding national policy.

The next branch of the Industrial Gas Section's activities is that of sales promotion, wherein the work of each industrial man is supplemented by national sales and promotional activities. This includes the industrial and commercial phases of the national advertising campaign, national industrial displays, specialized industrial books and service letters, programs at various national conventions, such as this convention, and publicity of industrial gas progress and activities. Such national promotion rounds out the activities of our industry and places it on a comparable basis with our competitors. Greater expansion of this branch is needed, particularly with regard to national advertising of industrial and commercial gas in trade and business magazines.

The other general classification of activities is the utilization branch from which we derive direct and immediate benefits. This involves some 13 working committees, delving into the diverse activities of nearly every commercial or industrial field where gas can be utilized. I need not describe in detail the advantages gained from the tremendous amount of work done by these working committees. Our position in industry today would be poor indeed if we had not the benefit of this committee activity to assist us.

The spread of industrial and com-



. . to gain two major objectives

mercial gas activities is so great that it is impossible for us individually to keep abreast of the developments in each gas application. Only through the studies and reports of specialized committees, wherein the experience of those best fitted to serve is presented to the industry, can we hope to keep abreast of the times.

Supplementing these activities and closely related to them is the work done by the Committee on Industrial Gas Research, which sponsors and supervises research on new and improved gas applications. Such research, in conjunction with that of appliance and equipment manufacturers, has given us among other sales tools important contributions toward the following improved gas applications:

Atmosphere furnaces for metal treating.
Perfected immersion melting of metals.
Radiant tube furnaces for metallurgical and enameling work.
Luminous flame heating applications.
Dehydration summer air conditioning.
Many other industrial and commercial applications and original technical data.

Such a list is by no means complete but it serves to illustrate the advantages which our industry enjoys today in meeting the competition of other fuels and which it would not have possessed had it not been for a progressive research program.

It is interesting to note that about 55 per cent of the committee members are from the natural and mixed gas territories and that a substantial number of chairmen and vice-chairmen of the various committees are from these areas. For example: Frank Rainey, Vice-Chairman of the Section; Jack Warden, Chairman of the Program Committee; George Parker, Chairman of the Ceramic Industries Committee; D. W. Reeves, Chairman of the Gas Engine Power Committee; Charles R. Bellamy, Chairman of the Air Conditioning Committee; D. W. Chapman, Chairman of the Display Committee, are all representative of the natural and mixed gas areas.

The entire industry is indebted to the contribution of these men and others who serve with them on their committees in furthering the activities of the section. It might be well to note that as a matter of policy the office of Chairman of the Industrial Gas Section is staggered between manufactured and natural gas territories, so that the general policy of the section can properly take on the flavor of the entire gas industry.

Broad Industry Benefits

Let us now examine the broader benefits to be derived from the proper functioning of the Industrial Gas Section. We have not as yet touched upon the philosophy of the business and the basically different approach that is made to it in different parts of the country. This has been particularly brought to my attention this year as Chairman of the section.

This is not so much a matter of geography as it is the difference in the relative price of gas *compared to other fuels,* the variation of business procedure found in different localities and the effect these have upon our consideration of our business. There is a fundamental difference between the natural and manufactured gas areas in their approach to industrial and commercial sales. This difference although it is growing less is valuable to the industry as it gives each of us the opportunity of profiting by the specialized technique developed elsewhere to meet an entirely different set of field conditions.

First of all, in the major types of business obtained there is a wide variance between the two classifications. The natural gas areas have secured much heavy, large-volume basic industrial applications including steel making, steam generation and large scale ceramics which in magnitude and volume are amazing to many manufactured gas men. Natural gas industrial men need recognize no peers on heavy industrial heat applications. Such installations show the potentialities of volume gas sales as the cost of gas can be made to approach that of competitive fuels.

Further improvements in large scale gas applications as the result of current experiences and developments in natural gas areas are beginning to permit the extension of such uses to manufactured gas sections even where rates cannot reach as favorable competitive positions with other fuels.

Smaller industrial and commercial applications in natural gas sections are obtained with relative ease in so far as the cost element is concerned. The sales approach is extensive and must deal to a considerable extent with the direct economics of the situation as large volumes of gas are usually involved and relatively small differences in fuel costs result in large monthly cost differentials.

In contrast, in the manufactured gas

areas these larger fuel applications, because of prohibitive differences in costs between gas and competitive fuels, are generally out of reach and the smaller and medium-sized non-residential gas applications constitute the bulk of the load.

In the absence of very heavy industrial loads, the manufactured gas men have specialized on these others and have become expert in smaller and medium-sized applications just as the natural gas men are recognized as experts on the larger. In the manufactured gas areas the approach is intensive rather than extensive and the sales approach deals more with the intangibles of gas operation. It has, in many situations, been a bit of constructive advice to salesmen to "leave the pencil at the office" when calling on the customer.

Lessons To Be Learned

There is much that these two groups, each with such broad and diverse experiences, can learn and profit from each other. The manufactured gas men can profitably observe the effect of competitive rates with more diverse and varied forms which are successfully used in the natural gas areas. They can properly adopt the policy of small unit profits and give scope to their imaginations to obtain volume sales. I am glad to say that the natural gas philosophy of industrial sales is having a very definite effect upon the thinking of the entire industry. For example, in several formerly conservative manufactured gas areas serious consideration is now being given to approaching the industrial gas problem in their territories with the determination to get all of the business that can be obtained at rates that in some cases closely approach their holder cost.

The natural gas areas as well can learn from the others a greater application and capitalization of the form value of the smaller and medium-sized industrial and commercial load, both from the standpoint of load factor over a period of years and particularly as a source of high revenue gas to increase the average rate earned on non-residential sales.

The natural gas areas can, I believe, also learn a more specialized sales approach to these medium-sized customers. I have found that the greater fuel cost of gas in the manufactured gas areas as compared with competitive fuels has forced the development of a selling technique that strongly emphasizes the value of the intangibles associated with the use of gas. This brings to mind some natural gas areas where electric competition in commercial cooking has made great strides in spite of low gas fuel costs because the proper value of the intangibles of gas operation was not built into the gas selling story. Such a condition need not exist.

The Industrial Gas Section can best fulfill its obligation to the industry by providing the opportunity of a better understanding of these varying sales approaches to the common problem.

In looking at other lessons that can be learned from discussions in Industrial Gas Section meetings, I can see that our sales organizations must be modified and enlarged to meet the needs of the times particularly in commercial applications. Electric competition is creeping in, stressing such intangibles as styling, modernity, cleanliness, coolness and better performance. While we are conscious of the fact that with modern gas equipment these same intangibles can be obtained, it is highly necessary today that we give in our own selling story the same recognition to these elements. Not only that but we must all repair our fences in anticipation of competition by rapidly replacing obsolete equipment, and in such replacements give preference to the equipment that will insure the best performance for gas, and which will properly defend our position against the insidious attacks of all other fuels.

The Industrial Gas Section can also serve as a medium to influence the attitude of the management of our companies toward non-residential gas sales.

(Continued on page 318)

Naval Academy Installs CP Ranges in New Buildings

Section of new buildings where CP gas ranges were installed. Inset—A typical installation

ONE of the largest installations of CP gas ranges on record is that now being made in the officers' apartment buildings at the United States Naval Academy, Annapolis, Md., where they are being installed in 84 apartments. This victory for CP gas ranges was made under highly competitive conditions.

In accordance with Navy practice, the buildings were designed to be very substantial structures, without frills, but with all the important improvements in building construction. Engineers of the Academy made quite a study of the mechanical equipment of kitchens before preparing specifications.

As the Academy generates its own electric current, the use of electric ranges was first considered. However, representatives of the Consolidated Gas, Electric Light & Power Co. of Baltimore, which serves the Academy, and gas range manufacturers proved that the new CP gas ranges have the automatic features and other advantages claimed for electric ranges plus the speed, flexibility and convenience of gas.

Gas Hydrates . . . *Field Practices in Natural Gas Pipe Lines*[a]

By W. M. Deaton[b]
and
E. M. Frost, Jr.[c]

THE natural gas industry has been bothered for many years with constrictions that form in gas pipe lines during the colder seasons. In the early days of the industry these usually were attributed to ice in the pipe lines, for it was recognized that natural gas carried water in vapor form and that this water condensed in the lines when the gas was cooled.

As the industry expanded, pipe-line "freezes" became more common. With the increased number of pipe-line systems this was not surprising, and the effect of the accompanying increased transportation pressures was for the most part overlooked. Although it was known that the temperatures of the pipe lines normally were above 32° F., the freezing that occurred usually was assumed to be caused by local cooling of the line owing to some exposure or to a localized throttling action of the gas.

Looking back upon the early experiences with pipe-line "freezes," in the light of present knowledge, such explanations are not satisfactory. However, because exact knowledge of the temperature conditions in the pipe line was lacking, it is not surprising that in those days such explanations seemed satisfactory.

Early Study of Gas Hydrates

Following development of large gas acreages in the Texas Panhandle, a number of pipe lines were built to carry gas from that area to distant points. To maintain high efficiency by avoiding condensation of water in the pipe line, equipment was placed at the initial compressor station of one of these lines to remove water from the gas. The water removal, or dehydration, was accomplished by direct cooling of the gas to about 40° F., which was below the expected minimum pipeline temperature.

Shortly after the dehydration plant was put in operation, difficulty was experienced because of plugging within the equipment. Inspection showed that the tubes through which the gas flowed were coated with ice. In checking the plant operation, it was determined that the temperature had been maintained at about 40° F. and that there was not enough local cooling, because of throttling or other causes, to produce temperatures as low as 32° F.

Despite the misgivings accompanying the thought, no other conclusion could be reached than that the condensed water in the tubes, in contact with the high-pressure gas, was freezing at temperatures above 32° F. As a result of these experiences, an investigation was undertaken to determine the facts. This work by Hammerschmidt[1d] was reported by him in August, 1934.

In the course of his investigation, Hammerschmidt found that solid compounds known as gas hydrates had been discovered by French investigators[2] as early as 1888. However, until the work of Hammerschmidt, the existence of natural gas hydrates was not generally known. It awaited his investigation to revive a subject which had lain dormant for nearly 50 years, and to bring out the importance of gas hydrates to the natural gas industry.

As soon as it was recognized that many "freezes" occurring in gas pipe lines were caused by gas hydrates and not water ice, the natural gas industry became greatly interested in further investigation of these substances. In the fall of 1935, the Bureau of Mines, in cooperation with the American Gas Association, started an investigation of gas hydrates and the freezing of natural gas pipe lines. Reports relating to the Bureau's work on this problem have been presented previously before the Natural Gas Section of the American Gas Association.[3, 4]

Remedial Methods Used in the Field

Application of Heat

As pipe-line stoppages during the winter were supposed to be caused by the freezing of water, one of the earliest methods used to remove such a stoppage was to apply heat to the line. Although this method was and still is a logical solution of the difficulty, the danger associated with such a practice cannot be over emphasized. Many times the pipe line is "fired" by burning combustible materials in close contact with the pipe, and if great care is not taken, the pipe may be heated to a point where it will rupture. This invariably results in a serious fire due to the escaping gas and may result in more serious damage.

During the past season at least one such accident occurred, resulting in the death of two workmen. Furthermore, unless the position of the "freeze-up" can be determined exactly, the application of local heat to the pipe line is an ineffectual method of relieving the stoppage. This is because it is difficult for the gas to absorb a large amount of heat unless an elaborate heating arrangement has been set up. Moreover, when heat is applied to the gas at some distance from the "freeze," a considerable portion of the added heat is dis-

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[a] Published by permission of the Director, Bureau of Mines, United States Department of the Interior. (Not subject to copyright.) Presented before the Natural Gas Section, American Gas Association, Tulsa, Oklahoma, May 8-11, 1939.

[b] Physical Chemist, Bureau of Mines, Petroleum and Natural Gas Division, Amarillo, Texas.

[c] Associate Chemist, Bureau of Mines, Petroleum and Natural Gas Division, Amarillo, Texas.

[d] The numbers refer to the references at the end of the paper.

sipated before the gas reaches the constriction. Where the stoppage is almost complete, there is a very low gas flow; and consequently there is difficulty in transmitting the required heat to the point where it is needed.

When the "freeze" can be located definitely and heat can be applied at a point close to it, temporary relief may be obtained by this method. If heat is to be applied, however, some system should be employed whereby the pipe cannot be heated excessively and in a manner that will not present a fire hazard. Even if the hydrates are decomposed, the water resulting from the decomposition should be removed from the line as quickly as possible, otherwise as soon as the pipe line returns to normal operating temperature, this water again will be converted into gas hydrates and may result in a more serious stoppage than previously.

Use of Alcohol

Another method commonly used to remove pipe-line "freezes" is the injection of alcohol into the line. This method was used even before it was recognized that "freezes" could be caused by gas hydrates as well as by ordinary ice.

The use of alcohol as an antifreeze being a familiar practice, it was a logical conclusion to assume that alcohol would melt the ice and that the resultant solution would have a lower freezing point. It has been found that hydrates are similar to ice in this respect, and alcohol has been used extensively by some companies.

Sometimes the alcohol is "lubricated" into the pipe line; sometimes it is injected with a hydraulic pump. The most effective method is to atomize the alcohol into the gas stream by means of a suitable nozzle on the injection equipment, thus facilitating its vaporization. During the past year Hammerschmidt has conducted tests on the effectiveness of alcohol and other materials as an inhibitor of the formation of gas hydrates. The results of these tests have been published recently.[5]

Ammonia as an Inhibitor

As a result of the work of Russell,[6] ammonia has been used by some gas companies to protect their lines from hydrate formation or to clear lines in which hydrates have formed. Because ammonia injected in the pipe line enters the gas stream in a vapor state and if not removed subsequently by absorption or chemical reaction will be carried along with the gas, it is logical to expect that its use would be very effective for these purposes.

Russell stated that the concentration of ammonia required, when used under the conditions of his tests, was a minimum of 42 parts per million (p.p.m.) or 0.0042 per cent by volume. If carbon dioxide is present in the gas, it would be expected that ammonia in the presence of water would react with the carbon dioxide to form ammonium carbonate; hence, the percentage of carbon dioxide needs to be considered. Russell states also that the gas used in his tests contained 0.2 per cent carbon dioxide. This is equivalent to 2,000 p.p.m. Virtually all natural gases contain some carbon dioxide, usually in concentrations of 0.1 per cent, or greater.

Ammonia reacts with carbon dioxide and water to form the carbonate and the bicarbonate according to the following equations:

$$2NH_3 + H_2O + CO_2 = (NH_4)_2CO_3$$
(ammonium carbonate)

$$NH_3 + H_2O + CO_2 = NH_4HCO_3$$
(ammonium bicarbonate)

These equations show that 2 volumes of ammonia will react with 1 volume of carbon dioxide to form ammonium carbonate and that equal volumes of ammonia and carbon dioxide react to form ammonium bicarbonate. Where the carbon dioxide concentration is 0.2 per cent, or 2,000 p.p.m., it would require 2,000 p.p.m. of ammonia to conform to the reaction producing the bicarbonate and twice this amount if the carbonate is produced.

Field tests were made by the Bureau of Mines to obtain information regarding conditions in a pipe line in which ammonia is used as an inhibitor of hydrate formation. The injection equipment on the selected line permitted continuous injection of ammonia at controlled rates. During the time of the tests the injection equipment was set for a delivery of 150 p.p.m. of ammonia to the gas stream. However, circumstances did not permit an analysis at the point of injection to confirm this figure.

An analysis of the gas at a point approximately 150 feet downstream from the injector showed an ammonia concentration of 90 p.p.m. At a point approximately 1.5 miles downstream from the ammonia injector, an ammonia concentration of 15 p.p.m. was found. Analysis of the natural gas showed a carbon dioxide content of 0.2 per cent. During this test the pressure in the pipe line was 400 pounds per square inch, and the temperature was approximately 45° F. All drips in the section under test showed that water was being condensed. These tests indicate that the reaction of the ammonia with the carbon dioxide (and the absorption of the ammonia by the water condensed in the line) was removing the ammonia from the gas stream.

Other evidence of a reaction between the ammonia and carbon dioxide was observed. The ammonia was injected into the line from a storage tank by means of a pitot tube and orifice arrangement similar to that described by Russell.[6] When this equipment was first put into operation a considerable amount of difficulty was experienced because of plugging of the line feeding ammonia into the pipe line.

Company engineers reported that solids removed from the line were ammonium carbonates. They found it necessary to heat the ammonia feed line above the ammonium carbonate decomposition temperature, otherwise the line would plug, usually in less than 24 hours, and a continuous injection of ammonia could not be maintained. A hot-water heating system was used for this purpose. In the course of their tests, the writers on one occasion found one of the 1-inch lines in the ammonia injection system plugged so tightly that a pressure of 400 pounds per square inch would not dislodge the plug.

Tests were made on the drip fluid removed from this pipe line. The water from the drips was found to contain 3 to 5 per cent by weight of ammonia (NH_3) combined with carbon dioxide as ammonium carbonate and ammonium bicarbonate, but no free ammonium hydroxide (NH_4OH) was found. This condition indicated that all of the ammonia in the drip

fluid had reacted with carbon dioxide to form carbonates.

A hydrate test was made using a sample of the drip fluid. The sample used contained 4.9 per cent by weight of ammonia combined as carbonates. Hydrates were formed with this drip fluid, although it was found that higher pressures or lower temperatures were necessary to form the hydrates than with ordinary water. At the temperature of the test, 35° F., the hydrate decomposition point using the drip fluid was 192 pounds per square inch, whereas the decomposition point using ordinary water was 127 pounds per square inch. This test was made in the field with a portable hydrate apparatus developed by the Bureau.

In some laboratory tests, using a gas of different composition, hydrates were obtained with a solution of ammonium hydroxide (NH_4OH) containing 10 per cent by weight of ammonia (NH_3). By analysis, the gas above this 10 per cent solution was found to contain 0.15 per cent (1,500 p.p.m.) of ammonia. At the temperature of the laboratory test, 39° F., hydrates in the 10 per cent ammonia solution were found to decompose at 431 pounds per square inch compared to a pressure of 218 pounds per square inch in ordinary water.

Although enough data are not available at this time to establish the complete hydrate curve for either of the gases in equilibrium with the ammonia solutions, the results of the above tests are significant in two respects: First, it is entirely possible to obtain gas hydrates when a considerable percentage of ammonia is present; second, the presence of ammonia exercises, to a certain extent, an inhibiting effect on the tendency of a gas to form hydrates. The use of ammonia in concentrations far exceeding the 42 p.p.m. mentioned by Russell will not necessarily keep hydrates from forming, but it may be expected that lower temperatures will be required to form hydrates at a given pressure when ammonia is present than when no inhibiting agent is used.

Ammonia has been used successfully by some companies to clear a pipe line in which there was an accumulation of gas hydrates. A common practice is to inject a "slug" of liquid ammonia into the pipe line and to depend upon the resulting high concentration of ammonia to decompose any hydrates that are present. The amount of ammonia required depends on so many variable factors that determination by trial is easier than by any other means. Success with this method has been reported when the ammonia could be injected into the line a short distance upstream from the hydrates.

Some pipe-line operators object to the use of ammonia because the pipeline crews usually are unfamiliar with the precautions necessary in handling liquid ammonia. Care should be taken to prevent injury to workmen due to the escape, especially in confined spaces, of large quantities of ammonia. Extremely low temperatures may be produced by the evaporation of ammonia at low pressures. If the steel containers or pipe lines and fittings are subjected to these low temperatures strains may be set up, and care should be taken to avoid shock in applying pressure or in manipulating the equipment. With proper precautions, however, the handling of ammonia should present no undue hazard.

Reports vary regarding corrosion caused by the use of ammonia in natural gas pipe lines. Most companies have reported no objectionable internal corrosion. One company, however, reported a considerable amount of corrosion in farm-tap regulators where gas was being distributed to small consumers.

Reduction of Pressure

One of the most effective methods in eliminating gas hydrates that have formed in a pipe line is to reduce the pressure to a point where the hydrates will decompose. This method was used even before it was known that the freezing that occurred in pipe lines was caused by hydrates rather than by the formation of ordinary ice.

In the early days, lowering the pressure in the line was not undertaken as a remedial method in itself but rather was incidental to blowing the line in an attempt to dislodge the obstruction. Nevertheless, in view of present knowledge concerning gas hydrates, the reduction of pressure in the line is a logical procedure. Field tests by the Bureau indicate that if the pressure of the pipe line is reduced below the decomposition pressure for the prevailing pipe-line temperature and the line is operated at this reduced pressure, the decomposition of the hydrates is accomplished satisfactorily.

Operation of a line at reduced pressure is not always possible or feasible. In certain lines, it is necessary to isolate the section that is giving trouble and to blow the pressure down without attempting to keep the line in operation. In using this method it may be necessary to reduce the line pressure considerably lower than the corresponding hydrate-decomposition pressure for the normal pipe-line temperature. This condition is occasioned by the fact that when the pressure is lowered rapidly, expansion of the gas in the pipe line may cause an appreciable temperature drop.

At the lower temperature a lower pressure is required for decomposition of the hydrates. For example, it was observed that when a 16-mile section of 10-inch line was blown down from a pressure of 335 to 90 pounds per square inch in 45 minutes, the temperatures as measured at several points along the line dropped from 42° to 35° F. The hydrate characteristics of this gas had been determined previously. The observed lowering of the

(Continued on page 326)

Committee To Assemble Advertising Data

H. Vinton Potter

THOMAS R. WEYMOUTH, chairman of the Natural Gas Section of the American Gas Association, has appointed a special committee to assemble institutional advertising data particularly applicable to the natural gas industry. H. Vinton Potter, Oklahoma Natural Gas Co., Tulsa, was named chairman of the committee. Other members are: D. C. Schnabel, Bozel and Jacobs, Inc., Houston, Texas; C. D. Greason, The Gas Service Co., Kansas City, Mo.; Otto C. Mauthe, Southern California Gas Co., Los Angeles, Calif.; and F. J. McKeeman, Columbia Engineering Corp., New York, N. Y.

The committee will assemble data furnished by member companies with a view to selecting outstanding advertisements which will be included in a portfolio for the use of companies in organizing and presenting their institutional advertising.

Home Service . . . *How It Fits Into the Sales Department*

F. M. Rosenkrans

- **A four-day home service conference and training course sponsored by the Home Service Committee of the American Gas Association is being held August 22-25 at the Chapman Park Hotel, Los Angeles, Calif., as this issue of the MONTHLY goes to press. Under the chairmanship of Miss Gladys B. Price, home service supervisor of the Southern California Gas Co., a comprehensive program of home service topics is being presented. A report of the conference will be published in September.**
- **The accompanying article by Mr. Rosenkrans is an abstract of a paper presented at the conference. A strong supporter of home service as an indispensable sales aid, he outlines the latest conception of its work and predicts its continued expansion.**

By F. M. ROSENKRANS

New Business Manager, The Gas Service Company, Kansas City, Missouri

THE Home Service Department as we understand it today, with the many activities it embraces, is a comparatively new thing in our organization. Up to a few years ago we had a few women employed whose activities were devoted to large cooking schools, sponsored by the company or a local newspaper, or held in connection with a local fair or food show. It will be easily understood that with the very few women employed and the limited scope of activities, little was accomplished aside from the good will created through participation in these local activities.

Old Order Changeth

Our management felt that we were doing a pretty good job through our New Business Department in developing the business of our company and equipping our customers with ranges, water heaters, house heating equipment, etc., as well as rendering a high standard of gas service. There was little conception of the possibilities of further development of the service of our company to our customers through the organization and activities of a Home Service Department.

About three years ago it was conceived that through the expansion of personnel of home service activities, there were many other activities which could be undertaken besides merely conducting large cooking schools, so a number of additional women were employed who had college degrees in home economics. At that time it was somewhat of an experiment and the results of the activities of this enlarged group were viewed very carefully. I am very happy to say today that our Home Service Department has won a lasting place in our organization. As the work has gone on and many avenues of activities developed, from the reports received of the definite results of these activities, including the good will of our customers, we now can see where there is need for even a larger organization than we have today.

The Gas Service Company, through its many divisions, serves approximately 260,000 customers, located in approximately 150 cities and towns in the area of western Missouri, a very large section of Kansas, northern Oklahoma, and two cities in Nebraska. At the present time we have a Home Service Department comprised of twenty-five women, with local Home Service Departments located in our larger cities and some of our small town group divisions.

Many of the communities served do not have a full time Home Service Department but are handled by a group of women in our field organization, who visit these communities periodically throughout the year. It has been our experience that a woman in the field must spend at least a month or longer in the community to make her work effective. This enables her to become acquainted with the people and local organizations, to gain their confidence, and to render a real service to them.

The Home Service Department is under the direct supervision of our New Business Department. This gives a direct tie-in between home service activities and sales promotion. We have learned a great many things about home service activities and the part home service plays in the development of our business and good will of our customers.

Educational Work Vital

A large percentage of housewives do not have a full conception of the advancements which have been made in gas appliance equipment for the use of our services. The most important phase of the home service activities is carrying forward, by means of intimate contacts with housewives, the educational work regarding these new developments, giving them a better understanding of the important part gas can play by the use of these splendid conveniences in the home.

Home service must be carried to the home. While cooking schools and public demonstrations are very important, we are not reaching a large percentage of our customers through these mediums. Essential information and help can only be given by home calls on the part of Home Service Departments, or by arranging small group meetings where intimate contact can be had. The housewives who are often the best prospects for our competitors, are in many cases the ones who are most difficult to reach except through

intimate, personal calls on the part of our home service people.

This work goes hand in hand with the carrying out of aggressive sales efforts. Housewives who are prospects for, or who have purchased modern gas ranges and other equipment, should be given full knowledge of the new features which add so many benefits to the home. Through all avenues of home service contacts, these sales prospects are developed.

CP Range Program

The presentation of the Certified Performance range to the customers in our area has been a rather large task. We have spent considerable money through newspaper advertising to acquaint customers, particularly housewives, with the Certified Performance range. This was a job of education and I believe that our Home Service women were one of the biggest factors in contributing to the success that we have had with our CP range development. At every demonstration that the home service women conducted, either before small groups or large groups, at food shows and fairs, a Certified Performance range was used.

Another factor was the education of our own organization, both the selling organization and the service organization. The home service women arranged special demonstrations for these groups in all of our many operating divisions, and brought home visually to our own organization the cooking methods for which this range was designed to assure maximum speed, economy and results.

Through negotiations with the school boards throughout our territory, we have been successful during the past year in re-equipping the domestic science departments of the majority of the schools and colleges in our area, and all of this new equipment is the very latest available. The home service women follow up this equipment with the school teaching staffs so they are entirely familiar with the equipment and its application to secure the best results with modern cooking methods.

The basis of activities of our Home Service Department is education. Our women are not expected to take orders for equipment. We have felt that if their job is well done along educational lines, sales will inevitably result, coming either through the dealer or our own selling organization.

Home service demonstrations helped introduce CP gas ranges in The Gas Service Company's territory. This display was held at the annual Magic Home Exhibition in Wichita, Kansas, Feb. 8-11. It was prepared under the direction of Doris Ingle, assisted by Adelle Morgenson and Dorothy Klauer, who appear in the picture

Dealer Helps

One of the big aids to increased sales is the part the Home Service Department plays in our dealer cooperative plans. Every range that is sold, either by the dealer or our own organization, is followed up by a member of our Home Service Department. On this home call the housewife receives instruction in the proper use of the range, as well as new methods which will secure superior results. This may appear to be a very easy thing to do, but as a matter of fact there are a number of problems present with which the home service women must be familiar in order to make the call most effective.

As you all know, there are many makes of gas ranges, and each manufacturer has some particular feature which he has developed and has used to promote his product. It is a rather large order for the home service women to become familiar with all these various features and trade lines. I will outline to you the procedure which we are following in this phase of our work.

Our home service women are making an effort to become acquainted with all the lines of gas ranges offered by our cooperating dealers. They first make a call at the store and have the features of the particular range explained to them. Later, one of these ranges is sent to the testing kitchen for the home service women to work with, in order that they may become intimately acquainted with it. This gives them entire confidence in successfully handling a home call on any particular range that the customer may have purchased.

From all of these activities perhaps one of the greatest things that has come out of it, in addition to the education and sales helps, has been the large factor home service has played in improving the relationship of the company to the customer. By meeting the housewife in her own home and discussing in detail with her the problems of home making and caring for her family, these specially trained home service women have made many warm friends in turn for the service they have rendered. Many problems would have been unknown or would have been inadequately handled had it not been for the home call made by the home service women. Truly we have had a very fine reflection from the home call work and contacts which the home service women have made. They talk with the housewives as woman to woman and they have brought to us many things that have a bearing on changes of policy and improving service to our customers to which, perhaps, attention would not otherwise have been directed.

There is certainly coming today a greater realization of the important part that home service is playing in our commercial development. As a

result of the home service activities and the educational work that is accomplished with the housewives who are using our service, a great aid has been given to sales. Thus we are overcoming the competition of those agencies that are endeavoring to lure the housewives to their service.

It is for these fundamental reasons that we have seen home service activities growing, and many companies that formerly did not maintain Home Service Departments are now adding them as an essential part of their commercial organizations. We are finding that with the important aid of home service, our organization has been able to work out a broader and more successful development program.

Amarillo Celebrates Long Gas Service

A TEN-PAGE section of the Amarillo, Texas, *News-Globe* for August 13 is devoted primarily to a history of the Amarillo Gas Company and featured articles on the gas industry. The occasion of the special section was the celebration of a third of a century of gas service.

Attractive pictures show scenes in Amarillo in 1906 when the company was formed while accompanying text gives the highlights of the company's progress, its present facilities and major gas appliance developments. Originally serving manufactured gas, the company now serves natural gas to 11,288 customers at rates which are among the lowest in this country. R. E. Wertz heads this most progressive company.

James Lawrence Is Dead

James Lawrence

JAMES LAWRENCE, vice-president of the American Light and Traction Company, which owns utility properties in various parts of the United States, died on August 5 after a short illness in St. Petersburg, Fla., where he had lived since last January. His age was 61.

Mr. Lawrence, whose office formerly was in New York later lived in Evanston, Ill., and had his office in Chicago. He was chairman of the Finance Committee of the American Gas Association from 1923 to 1928 inclusive.

A native of Milwaukee, he went to work in 1892 for the Milwaukee Gas Light Company. While he was with that company he studied accounting at night and became a member of the corporation's accounting department. In 1904, after the Milwaukee Gas Light Company had became a subsidiary of the American Light and Traction Company, Mr. Lawrence came to New York to join the parent company's accounting department.

Mr. Lawrence served as auditor of American Light for some years and, in 1923, became treasurer. The next year he received the title of secretary-treasurer and not long afterward he became vice-president also. He transferred his business activities to Chicago in 1929 when the company's main office was transferred to that city.

On July 1, 1935, Mr. Lawrence retired from active duty with the company, retaining the title of vice-president and dropping the positions of secretary and treasurer.

Accident Injury Rates Decrease in the Gas Industry

A GROUP of 446 gas utilities reporting to the A. G. A. Statistical Department and representing 83% of the manufactured and natural gas industry in the United States had a frequency rate of 12.0 disabling injuries in 1938 for each million man hours of exposure. This represented a decrease of 13.0% from the frequency rate of 13.8 reported by gas companies for the year 1937. This was the sharpest decline in the frequency rate reported by gas companies since 1932.

These same gas utilities also reported a severity rate of 0.94 days lost in 1938 for each thousand man hours worked, an increase of 1.1% from the severity rate of 0.93 reported for 1937.

The table below presents a ten year summary of accident experience of the manufactured and natural gas industry in the United States. It will be noted that for the manufactured gas companies the frequency rate dropped to 10.9 in 1938, a decrease of 14.2%. Natural gas companies also showed a decrease in the frequency rate, which dropped to 13.1 for this group in 1938, or 13.8% below the figure reported for 1937.

The severity rate for manufactured gas companies fell from 0.86 in 1937 to 0.51 in 1938, a decrease of 40.7%. For natural gas companies the severity rate rose from 1.02 in 1937 to 1.42 in 1938, an increase of 39.2%.

TEN YEAR SUMMARY OF ACCIDENT EXPERIENCE OF THE MANUFACTURED AND NATURAL GAS INDUSTRY IN THE UNITED STATES

THESE DATA COVER THE ENTIRE OPERATIONS OF REPORTING GAS COMPANIES AND THE OPERATIONS OF THE GAS DEPARTMENT ONLY FOR COMBINATION COMPANIES

					Frequency Rates		Severity Rates		
Year	*Number of Reporting Companies*	*Number of Deaths and Permanent Total Disabilities*	*Total Number of Disabling Injuries (Lost Time Accidents)*	*Total Days Charged Due to Disabling Injuries (Lost Time Accidents)*	*Number of Disabling Injuries per 1,000,000 Hours Worked*	*Number of Disabling Injuries per 100 Employees*	*Number of Days Charged Due to Disabling Injuries per 1,000 Hours Worked*	*Number of Days Charged Due to Disabling Injuries per 100 Employees*	*Number of Deaths and Permanent Total Disabilities per 100 Employees*
1929	354	33	6,218	304,510	30.5	7.60	1.49	372.0	.0403
1930	449	53	5,801	475,665	21.3	5.33	1.75	437.0	.0487
1931	453	35	3,859	302,093	16.1	3.93	1.26	307.5	.0356
1932	443	50	2,690	382,443	11.9	2.85	1.69	405.3	.0530
1933	473	23	2,575	197,669	11.5	2.56	0.88	196.9	.0229
1934	422	22	3,260	223,864	14.7	3.04	1.01	208.9	.0205
1935	458	31	3,073	290,017	13.8	2.90	1.30	273.9	.0293
1936	457	30	3,616	288,378	15.4	3.28	1.23	262.0	.0273
1937	480	24	3,348	225,698	13.8	2.93	0.93	197.7	.0212
1938	446	23	2,825	223,114	12.0	2.51	0.94	198.1	.0204

Credit Union . . . *A Cooperative Plan with Company and Employee Benefits*

- **Two months after the organization of an employee credit union in Chicago in January, 1935, which was described by Leslie P. Bruce in the May, 1938, A. G. A. MONTHLY, page 175, a similar cooperative society was inaugurated in Saint Louis. Mr. Royker, who is president of the Laclede Gas and Electric Employees' Credit Union, here reports on the progress of this organization.**
- **As in the case of the Chicago credit union, it has proved after more than four years operation to be soundly conceived and efficiently managed. It has made a useful and practical contribution to employee welfare by promoting thrift and helping employees over difficult periods.**

By KARL ROYKER

Laclede Power & Light Co., Saint Louis, Mo.

THERE is no single activity sponsored by a utility company that promotes happiness, welfare, friendliness and other good qualities in a higher degree than the employee-sponsored credit union. After more than four years of successful experience, we are firmly convinced that not only do employees benefit by their membership in the credit union but the company benefits as much.

In numerous instances our credit union has been the instrument that saved a man his job, relieved his mind of worries, equipped him better to do his job, restored his health, helped him to a better education, or helped his children to practical or cultural accomplishment—all this in addition to the promotion of the fundamental worthwhile habits of economy and thrift.

Loans for All Purposes

Loans have been made to members for every provident and productive purpose imaginable. Recently one employee was able to build a chicken house with the cooperation of the credit union. Another loan was made to a member for the purchase of a mule, which may or may not indicate that the horse-and-buggy era is still with us.

The credit union has financed the trousseau of an employee's daughter. It has helped members buy pianos and financed the tuition of children who are learning to play those pianos. Engagement rings, wedding rings, furniture, bathroom fixtures, bicycles—the applications read. Here, too, we see that the doctor, dentist and funeral director have all been paid with the help of the credit union.

The union is a cooperative organization composed of employees of the Laclede Gas Light Company and Laclede Power and Light Company. Its capital consists entirely of saving deposits made by the employees. Only employees can borrow from the credit union and all income from interest on loans is the common profit of the members.

Our credit union was organized in March, 1935, and during these four years a total of $30,742 has been saved in small regular semi-monthly deposits. The same money has been lent and relent in loans varying from $15 to $800. The total number of loans made over the four-year period is 2,442, and the cumulative total of these loans amounts to $178,200. It should be noted that the average loan according to these figures is $73. One per cent interest per month of the unpaid balance is charged on all loans, amount and time making no difference.

The credit union serves several purposes. It affords the membership a convenient method of saving regularly small sums of money. The employee who ordinarily does not save is encouraged to acquire that habit; and, thus, regardless of amounts saved, establish his credit. In our credit union a member can borrow fifty dollars on his good credit and without security other than his signature on a note.

A credit committee, consisting of three members, must approve all applications for loans before they are made. This committee meets once a week and has usually from fifteen to twenty applications to consider. In addition to the borrower's credit rating, careful attention is given to the purpose of the loan. The money must be for a worthwhile purchase, or expenditures of a nature that will be of lasting benefit to the borrower.

Many Need Help

It has been our experience that a far greater number of people than commonly assumed are unable to plan or budget for even necessary outlay of cash, either for the purchase of merchandise or payments for professional services. The majority can barely meet current expenses if they are of a familiar and recurring nature. Salary or wages has nothing to do with this fact, for it is often found that the man with the small income, of necessity, has founded his daily existence on a fixed series of small routine expenses, whereas a man with a larger income is tempted to vary his purchases both as to kind, quality, and cost. The result, however, for the two groups of men is the same; and when they—and that happens to most people eventually—are faced with a problem that can be solved only by cash in hand, some will fall prey to unscrupulous money lenders and others will borrow from a recognized institution, where money can be borrowed at more reasonable rates of interest.

The cost of handling small loans is high. Banks or others who charge from two to three per cent per month cannot be fairly criticized. Still, if it is possible at all to help your fellow workers over a difficult period at an

even smaller cost to him for such help and without taking advantage of his circumstances, all efforts in that direction seem justified. It is upon this basic reasoning that credit unions are founded. The reasoning embodies an ideal of "Help to Self-Help," but the remedy is utterly practical and sensible.

It's All Done With Magic

Mr. Booth

HARRY E. BOOTH, Southern California Gas Company cooking school stage manager and master of ceremonies, enlivens his footlight repertoire with "natural gas magic." At his command an oven- or top-burner, tucked up his sleeve, bursts into blue flame; or, if set on his magic table, the top burner accommodatingly demonstrates the flexibility of the natural gas flame and its heat variations; from this same magic table a faucet springs up and presto, hot water flows; at the click of a klixon, an Electrolux burner flame is extinguished. All of Mr. Booth's acts of legerdemain tie-in with gas range and gas refrigerator cooking demonstrations which follow, emphasizing the simplicity, economy, and dependability of modern gas appliances.

On occasion, Mr. Booth resorts to old-time sleight-of-hand tricks much to the delight of his feminine audiences. His props include trick canes, color-change handkerchiefs, magic flower bouquets, trick milk bottles and lighted cigarettes that disappear forever in the folds of his handkerchief.

Above Mr. Booth is shown thoroughly enjoying his own hot-water trick. In the background appear cooking school props: swinging mirror table (note reflections), 1939 gas refrigerator, and CP gas range. The Southern California Gas Company Modern School of Gas Cookery plays three-day engagements in neighborhood theatres throughout the system.

Gas Holders Guide Aerial Traffic

AIRPLANE beacons and signal lights are being installed on gas holders and on electric and gas plant stacks in the vicinity of North Beach Airport by Consolidated Edison Company of New York. Conforming to United States Civil Aeronautics Authority standards, these aerial traffic lights will serve as a warning to pilots landing or taking off from the field at night.

Rising to a height of 400 feet, the 15,000,000 cubic foot gas holder at Hunts Point gas plant in the Bronx and the 3,000,000 cubic foot gas holder at Flushing will be topped with beacons having both vertical and horizontal beams, projected through red lenses. Two 15,000,000 cubic foot holders at the Astoria gas plant and a holder at 137th Street in the Bronx will be lighted about the top with red signal lights in single and double arrangements.

Other utility properties within range of the air port to be illuminated are boiler house stacks at Astoria, coke oven stacks at Hunts Point and coal unloading bridges at Luyster Creek in the Astoria gas plant grounds.

Gas Revenues Gain in First Six Months

DOMESTIC customers served by manufactured and natural gas utilities totalled 16,154,100 on June 30, an increase of 317,400 over the number reported on the same date a year ago, according to figures compiled by the statistical department of the American Gas Association.

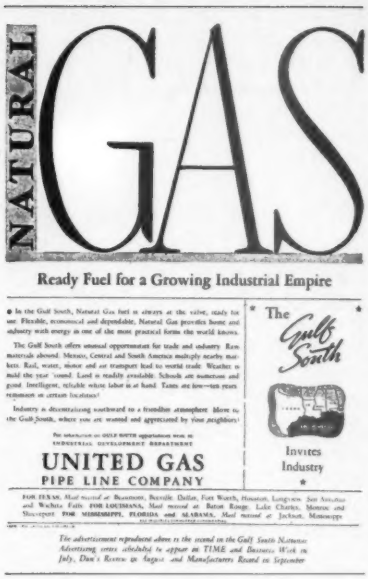
Revenues of manufactured and natural gas utilities aggregated $444,541,100 for the first six months of 1939. This was an increase of 5.8 per cent from the corresponding period of 1938.

Revenues from industrial and commercial users increased 8.3 per cent, while revenues from domestic customers gained 4.7 per cent.

Manufactured gas industry revenues totalled $190,849,000 for the first six months, an increase of 2.6 per cent from a year ago. Revenues from industrial users of manufactured gas increased 10.9 per cent, while commercial revenues gained 1.5 per cent. Revenues from domestic uses, such as cooking, water heating, refrigeration, etc., were substantially unchanged from the corresponding period of 1938.

Revenues of the natural gas industry for the first six months amounted to $253,692,100, a gain of 8.3 per cent from a year ago. Revenues from industrial uses increased 11.2 per cent, while revenues from domestic uses increased 7.3 per cent.

The quantity of natural gas used in generating electric power during the six months ending June 30, amounted to 87,002,000,000 cu.ft. This represented an increase of 15.8 per cent from the corresponding period of 1938.



Campaign To Sell the "Gulf South"

A LONG-RANGE campaign for the establishment of industries in the "Gulf South" has been launched by the United Gas Pipe Line Co., Houston, Texas, it was announced recently by N. C. McGowen, president. The purpose of the campaign is to attract new industries into the major parts of Texas and Louisiana, southern portions of Mississippi and Alabama, and northwest Florida, and to develop additional opportunities for industries that are now there.

A series of advertisements describing the natural resources of the territory are being run in four national periodicals: *Time, Business Week, Dun's Review* and *Manufacturers Record.* The Gulf South, meaning the territory served by the company's pipe lines, has been illustrated in the opening advertisement by a map outlining the territory. The second advertisement in the series is reproduced above.

W. N. Ford, head of the company's industrial development department, is in charge of developing complete data on the industrial advantages of the region.

Reports Gas is Safer than Electricity

THE United States Census Reports, over a period of years, show an irregularly declining number of accidental deaths from gas asphyxiation, and an irregularly increasing number of accidental deaths from electric current (other than industrial accidents).

For the past two years, 1936 and 1937 (1938 figures will not be available before 1940), the accidental deaths from electricity have exceeded substantially the accidental deaths from gas.

Gas Appliance Sales Rise Sharply

GAS appliance sales throughout the United States increased sharply during the first six months of this year as compared to sales figures for the corresponding months in 1938, it was reported by C. W. Berghorn, managing director of the Association of Gas Appliance and Equipment Manufacturers.

Sales of gas-fired furnaces (house heating equipment) registered an increase of 101.0 per cent for the first six months of 1939 over sales of the same months in 1938.

Gas range sales for the first six months of 1939 increased 38.4 per cent over the corresponding period of last year.

Sales of gas refrigerators for the first six months of 1939 were 30.0 per cent ahead of sales during the same months in 1938.

The gas water heater industry reports an increase of 28.1 per cent in the sales of automatic gas-fired water heaters during this six-months' period as compared to sales during corresponding months in 1938.

Sales of gas-fired boilers registered a rise of 5.6 per cent for the first six months of 1939 as compared to the same period in 1938.

Co-Starring Gas

Special tie-in copy featuring the all-gas kitchens in "The Women," MGM'S forthcoming Hollywood feature attraction, which is available to gas companies in three and five-column mats for local advertising. Consult your local theater manager and arrange promotional tie-ups on its appearance date

Outdoor advertising of the Jersey Central Power & Light Company, Asbury Park, N. J., which drives home forcefully the convenience and comfort of effortless gas heat

Gets Federal Contracts with A. G. A. Help

THE Minneapolis Gas Light Co. recently signed two contracts with government bodies that will mean estimated added consumption of 342,000 M cu.ft. per year. The first was with the War Department to furnish straight natural gas to Fort Snelling replacing coal for building heating and water heating, and electricity for cooking. The estimated load is 204,000 M cu.ft. annually. The original Fort Snelling is the oldest building in the state, and is now used as a museum.

The second contract was with the Veterans' Bureau to furnish 138,000 M cu.ft. of straight natural gas annually to heat the Veterans' Hospital in that city. Gas is already being used for cooking. Harry K. Wrench, vice-president and general manager of the gas company, credits much assistance in getting this business to George Bean, American Gas Association representative in Washington, D. C.

Gas-Operated Radio Stirs Interest

ONE of the first gas-operated radios to be shown in this country was recently displayed in the appliance store of the Springfield Gas Light Co., Springfield, Mass. It was on exhibition for nearly a month, during which time it was viewed with great interest by thousands of people.

With consummate showmanship, it was set up on glass blocks and a glass tube used in the gas line so it could be seen that there were no wires running to it other than the aerial and ground. A mirror was placed so that the gas flames could be seen readily. It was mentioned in the company's current advertising and attracted much attention. Two local newspapers carried stories of this unusual gas application.

While the gas-operated radio is little known here, it was developed and has been used extensively in England. It uses the principle of the thermopile which was discovered nearly a hundred years ago. If two wires of dissimilar metals are joined together and the joint is heated, it will be found that an electric current is created. The gas generator uses this principle by means of many tiny gas jets heating special alloy thermocouples or joints to provide ample unvarying current as long as the gas is burning.

An ordinary battery set or farm radio is used to utilize the power made by the gas generator. Results are the same as with any radio. In fact, except that it derives its power from an ordinary gas flame, it is exactly like any radio.

Dallas Requires A. G. A. Approval on Heaters

FURTHER recognition by the officials of an important American city of the necessity of American Gas Association approval for safe appliance operation was seen in the recent enforcement of an ordinance in Dallas, Texas, banning installation of water heaters which do not bear the approval of the Association's Testing Laboratories. This ban was written into the city ordinance years ago, but its enforcement was not started until several months ago.

After a two-month study of the ban and complaints that chemicals used in treating Dallas water caused undue deterioration to water heaters, L. B. Houston, acting city manager, announced that the ban would continue. The study was made for the city by Dr. E. P. Schoch, head of the bureau of industrial chemistry at Texas University.

Dr. Schoch previously had advised city officials that water heater deterioration in Dallas was no greater than in most cities of the country. He admitted that the chemicals used in water treatment did cause some slight deterioration, but explained that these chemicals were needed to provide a soft water and that they were used by most other cities. He frankly stated that some cheap heaters were defective and that many citizens hastened heater deterioration by using undersize heaters which were inadequate.

CP Champions Both

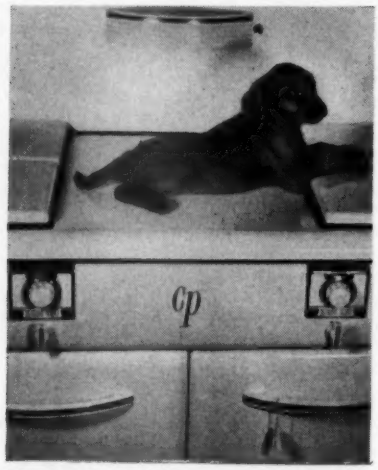


Photo by Don Middleton, courtesy "Gas Age"

This Irish setter pup, sitting atop a new Certified Performance gas range, has been christened "CP" by his master, Jess Tooker, new business manager of the Gas Service Company at Wichita, Kansas, in the fond hope that he will hang up as impressive a performance record as the appliance for which he is named. Mr. Tooker avers that the dog, like the CP range, is superior in at least 22 different ways. The name was suggested by Cy Young, regional director of CP promotion in the Kansas City district

Gas Meters Association Plans Sales Meeting

DIRECTORS of the Gas Meters Association of Florida and South Georgia meeting August 18 in Winter Haven, Florida, completed plans for a one-day sales conference which will be held September 22 at the Haven Hotel in that city. The conference will be in the nature of a sales training school for gas company salesmen. The program will include promotional talks as well as sales presentations on gas ranges, automatic water heaters, direct-fired heaters, and gas refrigerators. An all-day cooking demonstration to demonstrate the value of modern hotel and restaurant equipment will be conducted for commercial gas salesmen.

The meters association is made up of manufactured gas companies in Florida and South Georgia whose representatives meet once each year for an exchange of ideas and reading of papers on manufacturing, distribution and sales problems. In addition to this meeting, each September the association holds a sales training conference, such as that mentioned above.

Officers and directors of the Gas Meters Association of Florida and South Georgia are as follows: A. H. Bruning, Florida Public Service Co., Orlando, president; J. W. Owen, Central Florida Gas Corp., Winter Haven, vice-president; W. H. Duguid, Jacksonville Gas Co., secretary-treasurer; L. P. Sullivan, American Stove Co.; C. D. Littlefield, People's Water and Gas Co., Miami Beach; O. F. Keune, Florida Power & Light Co., Miami; Carleton Van Dervort, People's Water and Gas Co., Miami Beach; G. G. Greer, Clearwater Gas Department; and Mr. Pierce, Key West Gas Co., all directors.

Gas Engineering Course at Brooklyn Poly.

A COMPREHENSIVE course in gas engineering, arranged primarily for men employed in the manufactured gas and allied industries, is being offered this Fall by the Polytechnic Institute of Brooklyn. In a series of 28 lectures, the fundamental scientific principles underlying the production, distribution and utilization of manufactured gas will be presented, while in the accompanying series of 22 laboratory sessions, in which the students actively participate, these principles will be illustrated and applied. Five personally conducted inspection trips to various gas works during the course will give opportunities for examining actual equipment and witnessing its operation.

The course is sponsored by the Mechanical Engineering Department of the Polytechnic Institute, under the direction of Professor Edwin F. Church, Jr., head of the department, assisted by executives, specialists and engineers selected from the gas industry. It is held during the evenings beginning September 21.

For further information address Professor Edwin F. Church, Jr., Polytechnic Institute of Brooklyn, 99 Livingston St., Brooklyn, N. Y.

A. G. A. Rate Service Price Reduced

NEW low prices have been announced for the American Gas Association Rate Service, a 500-page, loose-leaf book of information relative to gas rate schedules throughout the country. The volume is kept up-to-date by supplementary sheets issued monthly, incorporating changes in gas rates as they occur.

The price to non-members of the Association has been reduced from $25 to $15 for the initial subscription and $10 per year for renewals. The initial subscription price to members remains at $10 but renewals have been reduced to $8 per year.

The rate book contains complete gas rate schedules in effect for practically every community in the United States and its possessions, also Canada and Newfoundland, together with information on heating value and type of gas supplied. It also contains a complete list of gas companies and communities supplied by each company, lists of gas companies having special rates for water heating, house heating, refrigeration and air-conditioning, and a list of companies and communities where thermal rates are in effect.

Setting the Pace in Advertising

FOLLOWING is leading editorial appearing in the July 29 issue of *The Black Diamond*, one of the principal publications of the coal industry:

REACHING THE PUBLIC

"We wish every officer, director and member of the National Coal Association and every railroad official with authority to approve an expenditure for the coal carriers would read the page advertisement, in color, appearing in the July 29 issue of the *Saturday Evening Post*. They will find there a clever sales appeal, proclaiming that gas is the dominant fuel at the New York and San Francisco World's Fairs. According to this printed page, gas is the ideal fuel for the four big home jobs: Cooking, water heating, refrigeration and house heating. The attractive advertisement concludes with the statement, 'Let America's Two Great Fairs Be Your Guide —Choose Gas for Modern Home Service.'

"The American Gas Association is doing a fine and intelligent job for its members. Why can't the same thing be said of the National Coal Association and the coal carrying railroads? Maybe a glance at this advertisement will make the point register.

"This aid of modern merchandising cannot be ignored much longer by the coal industry or 'the Fuel of Tomorrow' will not be coal."

GAS USE INCREASED, U. S. SURVEY SHOWS

National Association Reports Growth in All Areas.

A substantial increase in the use of modern gas equipment in new homes throughout the United States is reported by the American Gas Association.

In a utility survey of 104,000 one and two-family houses—70 per cent of the total number constructed during 1938—it was indicated that modern gas ranges were selected to do the cooking job in 88 per cent of the kitchens; in 12 per cent the sister appliance, the gas refrigerator also was chosen; 74 per cent of the home-owners enjoy 24-hour hot water service provided by automatic gas water heaters; and 57 per cent installed gas-operated heating systems.

The fact that approximately half of these homes are located in territories served by natural gas and the remainder in areas of manufactured gas is significant since it indicates a definite general trend in appliance buying and a growing demand in even the low income groups for gas equipment.

The above newspaper story, carrying the results of a survey by the American Gas Association, appeared in most of the principal urban centers of the country during July and August

Personal AND OTHERWISE

Fenton Kelsey Opens New Offices

WITH the near completion of their twentieth year in public utility promotion Fenton Kelsey, president of the Fenton Kelsey Company, announces the opening of a New York office and the appointment of a Los Angeles representative.

H. P. Jenks who has been associated with the company for the last two years is opening the New York office on September 1 at 342 Madison Avenue. L. L. Crahan, associated with public utilities as commercial and industrial representative and manufacturers' representative for over fifteen years, has been appointed to cover the southern part of California. His office is at 1621 South Grand Avenue, Los Angeles, California.

Recently the Chicago office of the Fenton Kelsey Company was changed from 122 South Michigan Avenue to 43 East Ohio Street.

L. D. West Appointed Vice-President

R. D. JENNISON, president of the Utility Management Corporation, mutually owned management organization for the Associated Gas and Electric System, has announced the appointment of L. D. West, vice-president, as supervisory vice-president for a group of operating companies in the system. For some time Mr. West has been in supervisory charge of sales and new business activities of the system.

H. C. Thuerk, formerly assistant to the vice-president in charge of sales, has succeeded Mr. West in this work, becoming general manager of sales for the Utility Management Corporation.

W. H. McInnis Joins Ebasco

W. H. McINNIS, until recently general sales manager of the Memphis Power & Light Co., whose properties were sold to the city, has become a member of the sales department staff of Ebasco Services, Inc., New York, N. Y. He is sales sponsor for the north central group of Ebasco client companies.

Mr. McInnis has utility experience dating back to 1911 when he started in the power business in Reno, Nev., and in the next 20 years held positions in a number of Stone & Webster client companies. In 1931 he became sales manager of the Tennessee Public Service Co. at Knoxville, and in 1934 went to Memphis as general sales manager.

Mr. McInnis has held a number of important committee positions in the American Gas Association, and last year was vice-president of the Southern Gas Association.

Frank Lynch Elected Ass't Treasurer

FRANK M. LYNCH, formerly of Buffalo, has been elected an assistant treasurer of Niagara Hudson Power Corporation by the board of directors, it was announced recently. Mr. Lynch continues as tax supervisor and an assistant controller of Niagara Hudson Power Corporation, positions which he has held since January 1, 1936. Prior to that time he was with Messrs. Price, Waterhouse & Co.

Wins McCarter Award

JAMES CORONA, an employee of the Cumberland County Gas Company, Millville, N. J., was presented with a McCarter Medal and Certificate at a dinner meeting of the Utilco Club, an employee organization, on August 2. Mr. Corona was honored for an outstanding act of life saving by use of the Schafer prone pressure method of resuscitation. The medal and certificate are awarded on the recommendation of the Accident Prevention Committee of the American Gas Association through the generosity of Thomas N. McCarter, chairman of the board, Public Service Electric and Gas Corp., Newark, N. J.

New District Managers

ACCORDING to an announcement made recently by H. A. Halvorson, general sales manager of A. J. Lindemann & Hoverson Company, Milwaukee, Wis., two new district managers have been appointed by the company.

N. A. Engler, who has been calling on the gas range trade around New York for the past ten years, is now in New England and New York territory.

Ray Sullivan, also a veteran at range selling, will see service in Chicago's metropolitan area.

New Wisconsin Director

ANNOUNCEMENT has been made by J. P. Pulliam, president of the Wisconsin Public Service Corporation of the election of M. H. Montross, Wausau, to the board of directors. Mr. Montross has been divisional manager of the Wisconsin Valley Division at Wausau since 1933, having previously served as district manager at Stevens Point and general superintendent at Wausau.

The addition of Mr. Montross to the board further increases the representation of the various sections of the state served by the company.

At Stevens Point, Mr. Montross served as manager of a combination property. Previous to his employment in Wisconsin, he acted as a gas engineer for the Toledo Railway and Light Company, and as superintendent of the gas department of the Gary Light, Heat and Water Company.

Joins Robertshaw

W. F. Cathcart

W. F. CATHCART, formerly connected with the American Gas Association Testing Laboratories in Cleveland, has joined the Robertshaw Thermostat Company as Cleveland representative.

Mr. Cathcart is a graduate of the Case School of Applied Science where he obtained the degree of Bachelor of Science in Chemical Engineering in 1936. His first year after college was spent as a sales engineer with the Continental Rubber Works after which he joined the staff of the American Gas Association Laboratory where he worked in the range, water heater, space heater, chemical and research departments.

W. G. Groth Heads Burkay Sales

WALTER G. GROTH has been appointed vice-president in charge of sales for The Burkay Company of Toledo, Ohio, according to an announcement by Jefferson D. Robinson, Jr., president.

The Burkay Company has developed and is in production with a new volume-flow water heating equipment adaptable for all automatic hot water requirements.

Mr. Groth's connection with the industry was first established with the Middle West Utilities Company, which organization he served for over ten years both in its general headquarters and with its subsidiaries. He also was associated for five and one-half years with the gas appliance division of the American Bosch Corporation of Springfield, Mass.

AFFILIATED ASSOCIATION *Activities*

Pacific Coast Gas Association

A. E. Holloway

A. E. HOLLOWAY, vice-president, San Diego Consolidated Gas & Electric Co., San Diego, Calif., has been nominated for the presidency of the Pacific Coast Gas Association. The election will be held on September 6 during the association's annual convention in San Francisco. Robert A. Hornby, vice-president, Pacific Lighting Co., San Francisco, was named for vice-president and D. G. Martin was selected for treasurer.

The following were nominated for directors: F. M. Banks, Southern California Gas Co., Los Angeles; R. S. Fuller, Pacific Gas and Electric Company, San Francisco; M. A. Pooler, Tucson Gas, Electric Light & Power Co., Tucson, Arizona; C. H. Potter, Southern Counties Gas Co., Los Angeles.

Present directors who will continue in office for another year are: R. E. Easton, Santa Maria Gas Co.; R. G. Logue, Ward Heater Co; W. R. Smith, Continental Water Heater Co.; John J. Winn, Jr., Portland Gas & Coke Co. H. L. Farrar, as outgoing president, will also be a member of the board.

Oklahoma Utilities Association

A TENTATIVE program for the meeting of the gas division of the Oklahoma Utilities Association, which will be held September 14 in the Biltmore Hotel, Oklahoma City, has been announced by Kate A. Niblack, secretary of the Association. W. L. Woodward, president, Zenith Gas System, Inc., Alva, Okla., and president of the Oklahoma organization, will preside.

A feature of the morning session will be the presentation of the prize-winning paper, "Duties of a District Manager," by L. D. Black, Lone Star Gas Co., Ennis, Texas. Mr. Black's paper won first prize in the nationwide essay contest for district managers sponsored by the Natural Gas Section of the American Gas Association.

F. M. Rosenkrans, The Gas Service Co., Kansas City, Mo., will speak on "Dealer Aids in Promoting Gas Sales." A paper by E. C. McAninch, Oklahoma Natural Gas Co., Tulsa, entitled, "Application of Temperature and Velocity Boosters" will round out the first session.

Following luncheon, Carl Dean, Oklahoma Natural Gas Co., will discuss that time-honored problem, "High Bill Complaints." Two important subjects, "Servicing Appliances" and "Air-Conditioning," will complete the program. The former will be presented by E. A. Bartolina, Consolidated Gas Utilities Corp., Blackwell, and the latter by Don Mayne, Williams Oil-O-Matic Heating Corp., Bloomington, Ill.

Canadian Gas Association

ACCORDING to an anouncement by George W. Allen, secretary treasurer, the thirty-third annual convention of the Canadian Gas Association will be held at Jasper Park Lodge, Alberta, Canada, July 3, 4 and 5, 1940. Julian Garrett of Edmonton, Alberta, is president.

The Empire State Gas & Electric Association

THE annual convention of the Empire State Gas & Electric Association will take place October 19 and 20 at the Westchester Country Club, Rye, N. Y. Important and timely subjects pertaining to gas and electric problems will be discussed by prominent speakers. Among those already on the program are: Chairman Milo Maltbie, of the Public Service Commission; Edward P. Prezzano, president of the state association; Conrad N. Lauer, president, American Gas Association; C. W. Kellogg, president, Edison Electric Institute, and W. I. Myers, formerly of the Farm Credit Administration.

A golf tournament will be held Thursday afternoon, October 19. Other entertainment features will include motor trips to the New York World's Fair, a dinner dance and floor show.

Hotel reservations should be made direct to the club.

Kapp Gets New Post

M. L. KAPP, who has been vice-president and director of the Michigan Public Service Company, which renders electric service to Northern Michigan, has resigned to accept the position of assistant to president of the Interstate Power Company with general offices in Dubuque, Iowa.

The Interstate Power Company is a subsidiary of Utilities Power and Light Corporation of Chicago.

CONVENTION CALENDAR

SEPTEMBER

Sept.	6-8	**Pacific Coast Gas Association** Fairmont Hotel, San Francisco, Calif.
	9	**Gas Industry Day**—Golden Gate Exposition
	20-23	**American Trade Association Executives** Westchester Country Club, Rye, N. Y.
	21-22	**Wisconsin Utilities Association**—Accounting Section Plankinton Hotel, Milwaukee, Wis.
	27-28	**West Virginia Oil and Natural Gas Association** Charleston, W. Va.

OCTOBER

Oct.	9	**Gas Industry Day**—New York World's Fair
	9-12	**American Gas Association,** Annual Convention New York, N. Y.
	16-20	**National Safety Council** Atlantic City, N. J.
	19-20	**Empire State Gas & Electric Association** Westchester Country Club, Rye, N. Y.
Wk.	23	**National Metal Congress and Exposition*** Chicago, Ill.
	26	**Midwest Industrial Gas Sales Council** Palmer House, Chicago, Ill.

NOVEMBER

Nov.	13-17	**American Petroleum Institute** Stevens Hotel, Chicago, Ill.

DECEMBER

Dec.	4-5	**National Industrial Council** Waldorf Astoria Hotel, New York, N. Y.

* Includes exhibit sponsored by A. G. A. Industrial Gas Section.

A Code for Utility Employees

By R. T. DUDREAR

Philadelphia Electric Co., Jenkintown, Pa.

THERE will never be a time, perhaps there should never be a time, when public relations of any industry will be absolutely satisfactory. As long as there is progress there will be the public relations problem. Only a dead business does not have to worry about good public relations. A live business finds this a part of every new decision it makes. It is needless to say that the utility industry will never be other than an advancing industry because of its broad possibilities.

Good public relations in the utility business are dependent not only on satisfactory service and rates but on the contacts made between employees and customers both on and off the job. Good contacts are effected generally by developing the employee's natural personality and knowledge of his job. In this function, management has shown its desire to assume its responsibility by the inauguration of training courses. However, the time spent on these courses is lost unless there is a friendly attitude and common understanding between management and the employee, from which there can be developed, by mutual agreement, a code for the employee. Some of the essential factors to be included in such a code are:

1. Remember always that the company's function is primarily to render service to the public, not merely to generate, produce and distribute the commodity. In other words sell service—not the commodity.
2. Never lose sight of the fact that the customer has rights, not just the company, and the thought that if there were no customers there would be no company and no job.
3. Realize that the service the company renders is competitive and tomorrow's developments may bring ever stronger competition.
4. Keep in mind that the customer's satisfaction with the service he receives depends upon the attitude, spirit and efficiency the employee, individually, displays.
5. Carefully analyze practices, policies and procedures and endeavor to make them simpler and more effective from the customer's viewpoint.
6. Familiarize yourself with the company's rate schedules and always be in a position to explain them in an understandable manner.
7. Study the job and responsibilities diligently so that errors may be corrected, misunderstandings explained, and new and lasting friends made.
8. Admit mistakes when made. All humans err and attempts to excuse or justify errors do not create trust or esteem.
9. Do not quote company rules as excuses for not doing what a customer wants done. Any justifiable rule has a reason; explain the reason instead of the rule.
10. Recommend freely to customers measures to obtain better and more economical service. This is a duty as well as an opportunity.
11. Stop and listen to complaints, criticisms and all suggestions. Always be tolerant of the customer's viewpoint. Never tell a customer he is wrong but lead him to see it. Keep an open mind and be a good listener.
12. Guard against carelessness, inattention and arguments; avoid discourtesy and lack of courtesy. Courtesy must be sincere.
13. Be a good citizen and take an active interest in civic affairs. Faithfully discharge all responsibilities as a citizen.
14. Be proud of the company and see that all actions make it a company to be proud of. A proper attitude toward the company is essential in the rendering of good service.

Public relations are nothing more than human relations. Friendly human understanding of both employee and the customer will pave the road of better relations.

If the utility industry can so direct its employees' relations as to make its customers really feel that they are buying its service and not the commodity alone; that the service bill is the best and biggest bargain they can buy; and that it returns more to them than they pay out, then the industry will have taken a number of seven-league steps toward its goal of better public relations.

Public opinion is the deciding factor in the utility's future. Pleased customers are the foundation of every successful business. Into each bit of labor must go a little of the magic of service. The above code, if followed, will surely bring this about.

Contribution of Customer Accounting Committee, Herbert E. Cliff, Chairman.

Social Security Act Amendments

SOCIAL SECURITY ACT amendments of 1939, which were signed by President Roosevelt on August 11, make it necessary to tax all employees regardless of age retroactive to January 1, 1939 or the date of an employee's sixty-fifth anniversary, whichever is most recent. Two new sections adopted which are of particular interest to public utilities are Sections 905 and 907.

Section 905 follows the new provisions of Section 1426 (a) and (b) of the Internal Revenue Code under which persons over 65 years of age are included as subject to the taxing provisions of the Act, after January 1, 1940. By the terms of Section 905, employer taxes are due on all wages (as defined) paid since January 1, 1939 to persons over 65 years of age.

Employee taxes are due with respect to the employment of all persons over 65 years of age since January 1, 1939 if such persons are still in the employ of the employer, or if not employed, to the extent that the employer owes any such employee any wages unpaid at any time within 90 days after the effective date of the Act.

Section 907 provides that the government shall deduct from any benefits payable, any unpaid balance of the one per centum tax upon the employee for employment during the year 1939 and after he became 65 years of age where the tax has not been deducted while he was in the employ of the company.

Gas Industry Offers Gala Time at Fair

ALL the units of the gas business throughout the West have joined forces to arrange a gala time for men, women and children at the Golden Gate International Exposition on September 9. The occasion will be Gas Appliance Day and the setting will be the Gas Industries Exhibit in the Homes and Gardens Building.

From morning 'til night there will be an almost continuous program of special entertainment, including music, comedy and rare feats of magic by outstanding performers. Grown-ups will receive valuable gifts and all youngsters will be given carnival hats.

ACCOUNTING SECTION

4 MEDLEY MEETINGS

LUNCHEON CONFERENCE
plus
SECTIONAL SESSION

Thursday, October 12th—Columbus Day

Due to the plan of condensing the Accounting Section's meetings into two sessions, the program for Thursday, October 12, will be a novel one. Four luncheons will be held as usual, but each will be a combination of a Committee Session and a Discussion Clinic. Something new? Sure!

COLUMBUS LUNCHEONS!!!

1. CUSTOMER RELATIONS
H. F. Willis, Chicago, Chairman
"Developing Customer Relations"
"Getting Results from Personnel"
E. C. Wegener, Chicago, Discussion Leader
Discussion Subjects

2. CREDITS & COLLECTIONS
H. E. Cliff, Newark, Chairman
Committee Report
"Collection Notices and Collection Practices"
E. A. Driscoll, Newark, Discussion Leader
Discussion Subjects

3. CUSTOMER ACCOUNTING
H. E. Cliff, Newark, Chairman
"Transfer of Meter Reading Records"
"Cycle Balance Control System"
"Unit Plan of Accounting"
L. A. Mayo, Hartford, Discussion Leader
Discussion Subjects

4. GENERAL ACCOUNTING
H. C. Moore, Cambridge, Mass., Chairman
O. H. Ritenour, Washington, D. C., Co-Chairman
"Property Records Systems"
"Depreciation"
H. L. Dalbeck, Cambridge, Mass., Discussion Leader
Discussion Subjects

• If you have any subjects you would like to hear discussed, if there are any about which you have some helpful information, will you inform the Chairman of the Luncheon Conference Committee. He is Wallace Murfit, The Philadelphia Gas Works Company, 1401 Arch Street, Philadelphia.

• All luncheons will be held at the Pennsylvania Hotel. Be sure to buy your ticket when you register, so reservation may be made for you for the luncheon you prefer.

The World of Tomorrow Will be at the Fair but The Gas Man of Tomorrow Will be at THE COLUMBUS LUNCHEONS

39 Gas Companies Win Trophies as Refrigerator Sales Jump

THIRTY-NINE gas utilities were named as winners of ship models of the famous American clipper, "The Flying Cloud," the trophies offered to companies making the highest number of gas refrigerator sales during the April-May-June period of the "Man-the-Sales" contest which was declared the most successful of any of the selling campaigns conducted by the A. G. A. Refrigeration Committee. The campaign lasted five months, ending July 31.

In announcing the winners, R. J. Rutherford, chairman of the committee, stated:

"Both from the standpoint of the enthusiasm with which the contest was carried on and the volume of gas refrigerators sold during the 1939 gas refrigeration selling campaign was the most successful in the history of the A. G. A. Refrigeration Committee.

"Each year since the Committee instituted these annual drives in 1933, the success has been greater than the year before, and the results of the 'Man-the-Sales' campaign has topped them all. The sales in this year's campaign were 33 per cent higher than in 1938."

As in previous years, Servel, Inc., manufacturers of the Servel Electrolux gas refrigerator, sponsored the contest through the Association of Gas Appliance and Equipment Manufacturers.

Participants in the drive had the advantage of an extensive promotional plan carried on under the able direction of H. S. Boyle, service sales promotion manager.

Utilities who won "The Flying Cloud" trophies and accompanying cash awards were:

Division 1—Consolidated Edison Co. of New York, Inc.; Washington Gas Light Co.; The Philadelphia Gas Works Co.; The Brooklyn Union Gas Co.; Southern California Gas Co., of Los Angeles, and Michigan Consolidated Gas Co. of Detroit.

Division 2—Providence Gas Co.; Brooklyn Borough Gas Co., Coney Island, N. Y.; New Haven Gas Light Co.; Springfield Gas Light Co.; Hartford Gas Co.; Harrisburg Gas Co.; Worcester Gas Light Co.; Laclede Gas Light Co., of St. Louis, Mo., and Consolidated Gas, Electric Light & Power Co., of Baltimore, Md.

Division 3—Florida Public Service Co., Orlando; Alexandria Gas Co.; Metropolitan Edison Co., Easton, Pa.; Roanoke Gas Co.; New Jersey Light & Power Co., of Easton, Pa.; Central Illinois Light Co., Springfield, Ill.; Ottumwa Gas Co., and the Central Indiana Gas Co., of Muncie, Ind.

Division 4—Ohio Fuel Gas Co., Columbus; Michigan Consolidated Gas Co., Grand Rapids; Peoples Gas Co., of Port Arthur, Tex.; Texas Public Service Co., Austin; Manufacturers Light & Heat Co., of New Castle, Pa., and Montana-Dakota Utilities Co., Minneapolis, Minn.

Division 5—North Penn Gas Co., of Port Allegany, Pa.; Macon Gas Co.; Natural Gas Company of West Virginia; Ohio Fuel Gas Co. (Athens, Ohio, Branch), the Manufacturers Light & Heat Co., of East Liverpool, Ohio; Ohio Fuel Gas Co., of Elyria, Ohio (Lorain Branch), and the Manufacturers Light & Heat Co., of Washington, Pa.

Division 6—Tex-Mex Natural Gas Co., Houston, Tex., Virginia Gas Distribution Corp., Staunton, Va., and the Virginia Gas Distribution Corp., Lexington, Va.

Members of the A. G. A. Refrigeration Committee were: R. J. Rutherford, chairman; H. R. Sterrett, consulting chairman; O. J. Haagen, B. T. Franck, E. E. Linburg, J. A. Sackett, J. W. Lea, H. C. Porter, George Stang, H. D. Valentine, E. J. Boyer, A. J. Maloney, E. G. Peabody, H. S. Boyle, W. M. Jacobs, F. E. Sellman, and J. W. West, Jr., secretary.

Floyd L. Carlisle, chairman of the board of the Consolidated Edison Co. of New York, Inc., receives a check for $1,105 representing a $500 first prize award and accumulated monthly prizes in the annual refrigerator sales contest. At the left is the year's trophy, a scale model of a famous clipper ship. The prize money won by the company was turned over to the Children's Welfare Federation and the Police Athletic League of New York to aid needy children

A. G. A. Builders' Competition Closes, Jury Makes Cash Awards

AN outstanding group of architects, builders and realtors from various parts of the country met at the Hotel Ambassador August 22-24 as a jury to award $10,000 in fifteen prizes in the nation-wide American Gas Association All-Gas Home Builders' competition. The complete results of the contest will be announced in the October issue of the A. G. A. MONTHLY.

The competition attracted more than 2,000 entries by outstanding architects and builders representing all parts of the United States and Canada, and was sponsored by the American Gas Association in cooperation with the *Architectural Forum* magazine.

The competition has been open to builders and architects who built or modernized homes using gas for the "four big jobs" of cooking, water heating, refrigeration and house heating from July 31, 1937, to July 31, 1939. The program has been actively promoted by the gas utility industry through its 1,500 gas companies serving a population of more than 80,000,000 through some 17,000,000 meters.

Members of the jury include B. L. Johnson, editor of the *American Builder* and *Building Age Magazine*, of Chicago; George F. Nixon, former president of the Chicago Real Estate Board and developer of the exclusive Glen Ayre district of Glenview, Ill.; Miles Colean, architectural supervisor and Deputy Administrator of the Federal Housing Administration, Washington; Hugh Russell, one of the outstanding home developers of the Northwest, particularly noted for his progressive methods in the use of materials and equipment, and Otto Teegen, director of the Department of Architecture of the Beaux Arts Institute of Design, and co-ordinating architect of the "Town of Tomorrow" at the New York World's Fair.

The judging closed with a formal dinner Thursday evening, August 24, in the Trianon Room of the Ambassador at which Conrad N. Lauer, president of the American Gas Association, was the principal speaker. The dinner was attended by outstanding executives of the gas industry and the architectural and building professions. The prize winning and other meritorious designs will be on display at the Gas Industries Building at the New York World's Fair.

Sales plan book

Fall Campaign Features CP Gas Ranges

A FALL campaign of CP gas range promotion, the third to be projected this year, will center around the theme: "Save While You Cook," with emphasis being placed on the "Time Saving, Food Saving, Fuel Saving" features of CP ranges.

Effort will be made to get local sales outlets conscious of the large gas range market made available by the approximately eight to nine million obsolete cooking appliances estimated to be still in use in the United States.

A Fall sales plan book, built around the "Save While You Cook" theme, was mailed August 15 to some 20,000 retail dealer outlets and utility executives by the Association of Gas Appliance and Equipment Manufacturers. Distinctive in make up, it is six-sided with consecutively opening pages fashioning into an attention-compelling and unique format.

Through its domestic gas range committee, the American Gas Association is urging member companies to inaugurate a thirteen-week radio spot announcement program tying-in with the CP "Save While You Cook" theme and the A. G. A.'s national advertising schedule to appear during October, November and December.

Companies Unite in Gas Water Heater Drive

A TEN-DAY cooperative newspaper campaign, featuring automatic gas water heaters, the first joint newspaper campaign ever conducted by independent gas companies in the New York area, appeared in metropolitan dailies late in July and attracted considerable attention.

Running a full seven-column advertisement on the back page of all metropolitan newspapers except the tabloids, which used it under the most popular comic strip, the campaign cost the cooperating gas companies $13,000. Participating companies were The Brooklyn Borough Gas Co., The Brooklyn Union Gas Co., Consolidated Edison Co. of New York, Kings County Lighting Co., Queens Borough Gas and Electric Co. and Westchester Lighting Co. Most of them also ran tie-in advertisements in the local papers in their territory.

The joint campaign was undertaken in order to secure the prestige and 5,000,000 circulation of the metropolitan papers in a gas water heating campaign which individual companies could not have afforded.

Featuring a trade-in allowance for old water heaters and 36 months to pay, the advertisement borrowed its illustrative theme from the Gas Industries Exhibit at the New York World's Fair, which also received attention in art and copy.

"Life Begins at '40" Sales Keynote

"LIFE Begins at '40 for the Gas Refrigeration Industry," emerged as the keynote and theme slogan for next year's expanded sales and promotional plans of Servel, Inc., which program was discussed at final sessions of national and regional sales executives of the company at the Hotel Roosevelt, New York, August 1-5.

"Because of the large potentialities lying ahead in the gas industry as a whole, and the increased business we are looking forward to in the next decade, it was the concensus at our sales sessions just ended that 'Life Begins at '40 for the Gas Refrigeration Industry' was an ideal challenging keynote to stimulate next year's sales efforts," George S. Jones, Jr., of Evansville, Ind., vice-president and general sales manager stated. "Accordingly we expect to build our sales and promotional campaigns for the next year around this theme which seems so appropriate right now."

The 1940 promotional program was presented at the meeting by H. S. Boyle, the company's sales promotion manager.

Servel Sales Meeting in New York

THE annual sales convention of officials, regional sales managers and department heads of Servel, Inc., will be held at the Hotel Roosevelt in New York City October 5-8. Holding of Servel's annual sales convention in New York City is a precedent, the conference in other years having been held at Evansville, Ind., where the company's main offices and plant are located, or at such places as Hot Springs, Va., or French Lick Springs, Ind. New York was chosen this year to tie in with activities at the New York World's Fair where Servel has an exhibit in the gas industry's "Court of Flame" building. The annual sales convention will immediately precede the annual convention of the American Gas Association.

An Unmissed Opportunity

The Michigan Consolidated Gas Company steps out in front with an effective window display featuring the excellent illustrated article on CP gas ranges in the July issue of House & Garden. *Thousands of copies of this article have been distributed with good effect by member companies to their dealers and customers. Sample copies may be obtained from the Committee on National Advertising at Association headquarters*

Industrial Gas SECTION

F. H. Trembly, Jr., *Chairman*
F. T. Rainey, *Vice-Chairman*
E. D. Milener, *Secretary*

Prize Restaurant of 1939 Sets Record for Complete All-Gas Service

GAS has long been the favorite fuel in top-flight restaurants throughout the country, but a new high was reached for complete utilization of gas with the opening this summer of the new Crosby's Restaurant in the Carnegie Medical Center Building in Cleveland, Ohio. With the single exception of heating the building, which is done by city steam, gas is used for virtually every operation to which it could be applied, even to the finishing touch supplied by the display gas lamp at the entrance.

Since Crosby's is considered one of the finest restaurants in the country and its details and appointments are the latest word in modernity and convenience, the achievement of gas in dominating its operation is even more noteworthy. With a reputation throughout the restaurant industry as sticklers for perfection, Jule and Pearl Crosby, operators of the restaurant, selected gas because of its completely satisfactory performance in previous Crosby restaurants.

Real Selling Job

Consider for a moment the impressive array of gas equipment listed on this page which is a vital and indispensable part of the Crosby institution. It represents a real selling job on the part of the industrial gas department of The East Ohio Gas Company, the equipment manufacturers and the kitchen equipment house, as well as being a tribute to gas fuel.

Crosby's kitchen smacks you right between the eyes with its cleanliness and orderliness. It well reflects the two years of careful planning that were put into it.

It is a vermin-proof and sound-treated kitchen with white ceramic tile walls to the ceiling all around, with a new type of sound deadening material on the ceilings, with a quarry-tile floor and with all fixtures mounted in tile bases.

Along the rear wall are the battery of three large gas ranges, two of them with salamanders, the gas deep fat fryer, the three-deck automatic steamer, the 60-gallon steam-jacketed kettle and the combination gas and charcoal broiler.

But Crosby's special pride is the basement set-up. Here is a special room, housing the gas air conditioning equipment, the gas hot water system, the water softener system units, and the commercial gas refrigeration units supplying the kitchen refrigerators.

The three-cell gas summer air conditioning unit has a capacity of 7,500 cubic feet per minute of fresh air plus 3,500 cubic feet per minute of re-circulated air. Fresh air is sucked in through a vent at the second-story level and pulled through paper filters of the throw-away type. In winter it is then passed over tempering coils supplied with steam from a gas-fired boiler; and in both summer and winter it is passed through a spray of lithium chloride, which gives it a thorough washing, removes all dust, soot and foul odors, and at the same time does its principal job—dehumidifying—taking out a percentage of the moisture in the air.

Entrance to Crosby's. Note gas lamp on the right

Gas-Fired Equipment In A Single Restaurant

- 1 gas steam boiler, supplying steam for kitchen and coils in gas air conditioning unit
- 3 gas-fired dehumidifying air conditioning cells
- 9 commercial gas refrigerating units
- 3 heavy-duty gas ranges
- 2 salamanders
- 1 deep fat fryer
- 1 charcoal-gas broiler
- 1 gas toaster
- 1 double-deck roasting oven
- 2 gas bake ovens
- 1 direct-fired gas-heated flat work ironer
- 1 high pressure boiler, capacity for two pressing machines
- 1 742-gallon blast-type immersion-tube gas water heater
- 1 display gas lamp at entrance of restaurant

The lithium chloride carries off the moisture and impurities, which are in turn removed from it by the intermittent application of gas heat. Due to the ease with which a large volume of moisture can thus be removed from the air, a very high percentage of fresh air can be used in the system, all filtered, washed and dehumidified before being introduced in the restaurant. Thus, for example, a relative humidity of 40% with a temperature of 80° can be maintained even on the most sweltering days to provide a high degree of comfort without undue chilling of the air.

The air passes through the cooling coils, refrigerated by a compressor (rated at 50 tons refrigeration) as it leaves the gas air conditioning unit and just prior to being introduced into each of the various departments of the restaurant.

Immersion-Tube Water Heater

In this same room is a 742-gallon capacity gas, blast-type, immersion-tube water heater, assuring a constant dependable hot water supply. This heater has a recovery of 650 gallons per hour with a 140-degree temperature rise—and automatically maintains a water temperature of 175° for all cleaning purposes. An exceptionally high degree of heating efficiency is attained since the hot gas flames are blown through a series of tubes immersed in the tank, causing combustion to occur in the tank.

In a corner of this room the water softening apparatus is located. Mr. Crosby estimates that the use of this equipment saves as much as 35% in soaps and that, in addition, his linens wear longer as the result of being washed in softened water. It is estimated that the restaurant uses in the neighborhood of 5,000 gallons of soft water daily for laundering, dishwashing and similar functions.

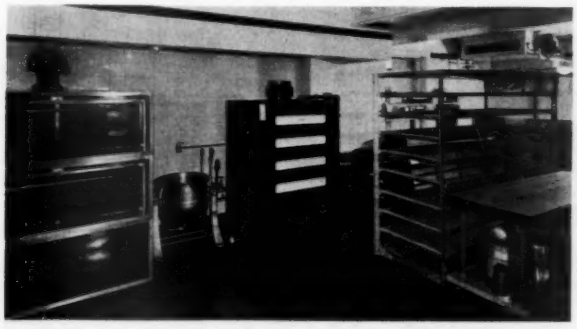
Underneath the water heater are located three of the new commercial gas refrigeration units supplying the kitchen boxes directly above. In all, there are nine of these large gas refrigerating units in the new Crosby's, which is the largest single commercial installation of gas refrigeration in the world today.

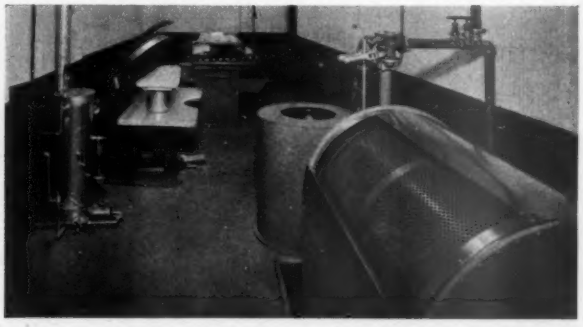
In a nearby room is a complete gas laundry, equipped with the most modern monel metal equipment. Employees are furnished with everything they wear on duty and the efficient laundering department is capable of handling upwards of 4,000 pieces per day. There is a washer of 75 lb. capacity, an extractor or dryer, a huge gas-fired flatwork ironer and a steam press. Mr. Crosby estimates that this laundry department will save him in the neighborhood of $8,000 a year.

On the floor above the kitchen is the daylight Crosby bake shop. Here are two four-deck gas ovens, with individually controlled decks where the famous Crosby pop-overs, rolls, pies, and pastries are turned out. Also, in this department are two baker's tables with four bins each, a large aluminum tilting kettle, two mixers, and a dough divider. On a recent day production in this compact bake shop included: 65 pies, 2,500 pop-overs, 2,000 assorted rolls, and 20 loaves of bread.

All in all, it's an ideal restaurant with gas, the ideal fuel, lending a big hand in its successful operation.

An impressive array of gas-fired equipment is visible in this spic-and-span kitchen. On the far wall can be seen, left to right, a gas toaster, three of the commercial gas-refrigerated boxes, charcoal gas broiler, deep-fat fryer, heavy duty gas ranges with salamanders, and stock kettle and steamer heated by gas-generated steam





On the left is a view of the bake shop in Crosby's restaurant which features two four-deck gas ovens with individually controlled decks. The other picture shows the complete gas laundry. The total gas consumption at Crosby's the first month of operation was 400,000 cubic feet. This jumped to 700,000 cubic feet the second month, which is approximately the peak according to company estimates

INDUSTRIAL & COMMERCIAL NATIONAL ADVERTISING FOR SEPTEMBER

The Advertising Committee of the Industrial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full-page advertisements will appear in the following trade and business magazines during the month of September.

Magazine	Date	Topic
American School Board Journal	Sept.	Gas for Commercial Cooking
American Restaurant	Sept.	Gas for Commercial Cooking
Bakers Helper	Sept. 2	Gas for Commercial Baking
Bakers Weekly	Sept. 2	Gas for Commercial Baking
Ceramic Industry	Sept.	Gas in the Ceramic Industry
Chain Store Age	Sept.	Gas for Counter Cooking
Chemical and Metal Engineering	Sept.	Gas for Chemical Process Industries
Food Industries	Sept.	Gas for Heat Processing of Foods
Heat Treating and Forging	Sept.	Gas for Heat Treating Metals
Hotel Management	Sept.	Gas for Commercial Cooking
Industrial Heating	Sept.	Gas for Heat Treating Metals
Industrial Power	Sept.	Gas for Industrial Heating
Iron Age	Sept. 28	Gas for Heat Treating Metals
Metals and Alloys	Sept.	Gas for Heat Treating Metals
Metal Progress	Sept.	Gas for Heat Treating Metals
Modern Hospital	Sept.	Gas for Commercial Cooking
Steel	Sept. 25	Gas for Heat Treating Metals

INDUSTRIAL GAS SECTION ACTIVITIES

(Continued from page 300)

In that respect, I believe that the natural gas areas are at present the more fortunate.

It is but natural that the attention and interest of the management should be directed toward that part of the business involving the largest consumption and revenue. In the natural gas areas for the year 1938 the non-residential consumption was 70 per cent of the total send-out, and over 40 per cent of the total revenue. In consequence, there is great management interest and understanding of this load. This is a fortunate situation that at times, I believe, industrial men from the natural gas regions do not entirely appreciate.

Look for a moment at the contrast

in manufactured gas territories where the non-residential send-out is but 30 per cent of the total and but 20 per cent of the total revenue. In many situations these percentages are less than half and as a result this branch of the business is often a matter of secondary interest to the management, being greatly overshadowed by the residental load.

While every branch of the industry has its problems and while I know you are fully aware of those problems which are yours, I believe it incumbent on me to point out that you as a group are most fortunate in generally having the direct interest and understanding of your management behind your activities. With the manifold problems that present themselves, your path would be a difficult one indeed if it were not for this interest.

Industrial Gas Goal

In an address this Spring before the New England Gas Association, I proposed that the manufactured gas industry set as its goal an increase of their non-residential sales from the present 30 per cent to 50 per cent of the total gas send-out. In certain utilities in that area a program is now under way to accomplish this very objective. It is one that I know they can accomplish if they but approach the problem with the proper determination. I would fail to do justice to the responsibility invested in me and to the opportunity that I now have if I did not make a similar proposal.

The natural gas industry could properly set as its goal an increase in revenue from non-residential sales, from the present 40 per cent to over 50 per cent of the total revenue of the industry. Once this is accomplished, you will find that the management of your companies will show an even greater interest in your problems and sales activities. I know of no single event that would more quickly raise the industry's revenues and have a more beneficial effect on the cause of industrial gas generally than to have a substantial branch of the industry such as this push its gross revenue from non-residential sales up to that mark. With this accomplishment, we will indeed have come of age and will have forced a full recognition of the value and future potentialities of this branch of the business.

From what I have seen, I have every reason to believe that it can be done. It means directing closer attention to every new gas use; and, since we are talking of revenue rather than send-out, directing attention particularly to those smaller industrial and commercial uses which can be obtained on the higher steps of the rate schedule. It also means making the most efficient applications possible so that customer's lower overall operating costs will allow us to sell to them in the higher rate brackets. It means perseverance and hard work but it can be done.

In a long-range appraisal of this entire industry it is apparent that the use of gas for non-residential purposes is definitely on the increase, that this field offers the greatest opportunity for future healthy growth and that in this next decade we may confidently expect industrial and commercial gas throughout the entire country to assume the position of the dominant American fuel.

It is my sincere belief that this can best be accomplished by taking full advantage of the opportunities afforded, of obtaining greater experience, inspiration and encouragement through mutual cooperation under the agency of the Industrial Gas Section.

Orchids to Gas

ORCHIDS almost beyond count! Thirty thousand plants, most of them in bloom and many bearing from three to six gorgeous blossoms! Gardenias, too, by tens of thousands! They make an unforgettable sight in J. A. Carbone's nurseries in the Berkeley hills across the bay from San Francisco. And they're prize-winners, too, since Carbone orchids have been winning medals since 1892, including the highest award at the Panama-Pacific International Exposition in San Francisco in 1915.

Correct heat is a vital factor in the cultivation of both orchids and gardenias. They require a steady temperature of 70 degrees the year round, be they seedlings, slips or mature plants—and that's where natural gas enters the picture. Carbone uses natural gas to maintain the proper temperature in his greenhouses and reports that it does the job perfectly, in contrast to the worry and bother he experienced for decades with other fuels.

Gas, he finds, gives uniform results without watching, and is cheaper and cleaner. And cleanliness is most important in his business, because his delicate plants would suffer from lack of light if the glass houses were to become coated with soot and smoke.

GOING AHEAD *with Industrial Gas*

With a greater percentage of the industry's 1940 national advertising fund assigned to the non-residential branches of gas sales, J. P. Leinroth's National Advertising Committee of the Industrial Gas Section has picked 4 more leading trade journals in 4 new fields to add to its current list of 14 media, and carry full-page hard-hitting ads on how to make money with gas. "Chain Store Age," "Chemical & Metallurgical Engineering," "Industrial Power," and "American School Board Journal" are the selected publications.

Talk about rabbits—they're not in it with industrial gas-fired dehumidifying units. A year ago Edgar P. Lewis & Sons, Boston candymaker, installed one No. 50 silica gel unit to replace inadequate compression air conditioning machinery for regulating the weather in its storage and packing rooms. Now it has 9 silica gel machines—three No. 50's, five No. 14's, and one No. 6-rotary—controlling processes as well as storage and packing.

"GAS Will Solve the 'Big 3' for Industry" says Philadelphia Electric Company in a direct and effective picture-plus-testimonial booklet for industrial customers—and we only wish more gas companies would use this brand of direct mail on the local captains-of-industry. The "Big 3" jobs turn out to be: Process Heating, Dehumidification, and Space Heating and the company's industrial gas sales engineers earn the label " 'Big 3' Experts."

The magnificent Liverpool Cathedral, said to be the third largest in the world, is being equipped for gas heat. Total output of boilers and direct heaters is 9,500,000 B.t.u. per hour. Address congratulations to the Liverpool Gas Company.

Charlie Bellamy's Industrial and Commercial Air Conditioning Committee is developing a comprehensive plan for cooperative research in conjunction with the Research Committee of the American Society of Heating and Ventilating Engineers.

Clippings from the Industrial Publicity Scrapbook which show what your Publicity Committee can do with just one good speech by way of talking it over with editors in fields outside of the gas industry: The paper delivered by Jimmy Dare (Public Service of Northern Illinois) on "Luminous Flames" at the Cleveland Industrial Gas Sales Conference was published by "Industrial Heating," "Ceramic Industry," "Gas," "Heat Treating & Forging," "Glass Industry," and "Industrial Gas," and abstracted in "Iron Age," "Glass Digest," and "Metals & Alloys."

Tar Handling and Treatment

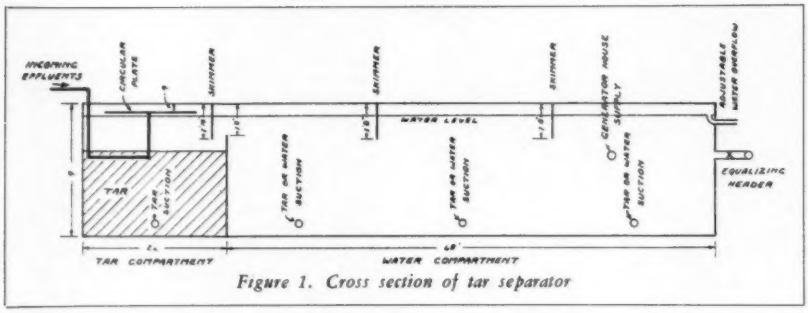


Figure 1. Cross section of tar separator

By Karl B. Weber

Consolidated Edison Company of New York, Inc., Long Island City, N. Y.

It is the purpose of this paper to present a description of the tar handling facilities and an outline of the tar treatment at the Astoria Plant of the Consolidated Edison Company of New York, Inc.

A brief outline of the plant will serve as a background to give some perspective to the material presented.

The Astoria Plant has a nominal capacity of 71,500,000 cubic feet of gas per day. The generating equipment consists of two generator house units of twelve sets each, automatically controlled. The sets are not equipped for back run operation, are without water jackets and automatic grates and are therefore hand clinkered. Twelve sets are of the Williamson single shell and twelve are of the U.G.I. three-shell type. There are a total of twelve waste heat boilers producing high pressure steam in conjunction with the main boiler plants. Coke produced at the Hunts Point Plant in Becker type Koppers Coke Ovens is used for generator fuel and various grades of heavy oil used for enrichment.

The equipment for tar handling and treatment falls in the customary classifications; separators, condensers, treatment facilities, dehydration apparatus, fuel tanks, mixing tanks, and storage tanks.

The separators are steel tanks of rectangular design, four in number. Each generator house uses two, one for wash box and the other for condenser tar service. Each separator is 90 feet long, 25 feet wide, and 9 feet in depth and is divided into two compartments. The first compartment, which is 22 ft. long, serves as the receiving and tar settling compartment. The second or remainder of the separator receives the overflow from the first and serves as the water compartment for generator house services. The effluents from the wash boxes and condensers are admitted to the tar compartments onto circular plates from below through a hole in their centers. There are no baffles or partitions other than three skimmers across the direction of flow. The water compartments of all four separators are connected together by a 20" diameter header with a valve at each separator. The water compartments are also equipped with steam coils in the bottom and open steam jets, projecting into the water for the necessary heating. (Figure I.)

A small, underground concrete tank 25 feet long, 15 feet wide and 7 feet in depth is provided for the collection of the drips of the auxiliary apparatus.

Five suitably connected pumps, one a spare, are used for continuous, separate pumping of each separator and for returning any tar which overflows to the water compartment back to the tar compartment.

Each tar compartment is equipped with an electrical tar level indicator. The apparatus consists of two units, each an electrical circuit which operates a light through suitable switches and relays. The circuit is actuated by the tar-making contact with an electrode which projects into the separator a desired distance. The electrode of each unit is set so that the lights operate to indicate a high or low tar level in the compartment.

Tar is pumped continuously from the tar compartments. The tar is kept from overflowing into the water compartments by suitable pumping rates, a tar depth of approximately 5 feet being held. The remaining 3½ feet of depth is sufficient for the overflow of clean water into the water compartment. A material aid to the operator in maintaining the depth of tar are the electrical tar level indicators, which show at all times whether or not the tar is being pumped at the proper rate.

This arrangement of physically separating the tar from the water, where the latter is used for generator house purposes, has eliminated the serious drawback of circulating this water from above the tar as in the separator of usual design.

The temperature of the water for generator house use is kept at the maximum obtainable with the use of exhaust steam on

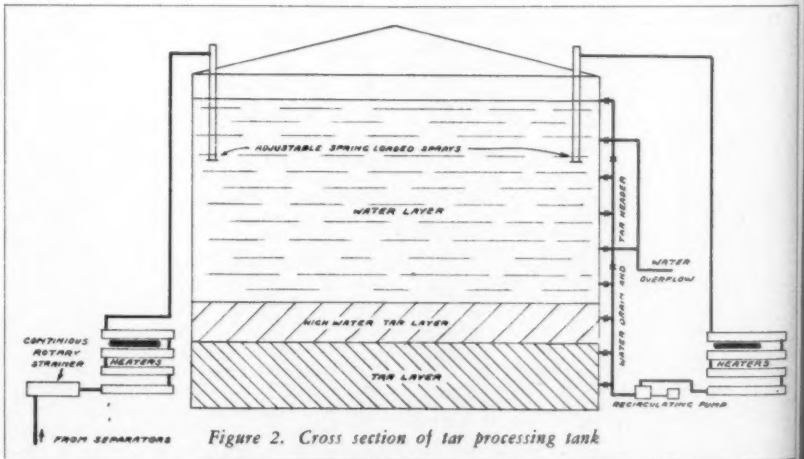


Figure 2. Cross section of tar processing tank

Presented at Joint Conference of Production and Chemical Committees, American Gas Association, Rochester, N. Y., May 22-24, 1939.

the coils and jets in the water compartment. As an additional aid in separating the tar in the condenser effluent, water from this compartment is circulated through the condenser tar drains. When this means of raising the temperature of the effluent has proven insufficient, water is sometimes pumped from the water compartment onto the plate in the tar compartment mixing with the incoming material. Generally, the water content of the wet tar from the separators ranges from 50-80 per cent.

Storage Capacity

The tar treatment equipment used depends upon the storage capacity required for finished tar. Normally, 3 400,000-gallon steel tanks 50'-0" diameter by 27'-0" high are used; though for extended periods of peak loads two of the steel tanks have sometimes proven sufficient for the requirements of the plant. Two 375,000 gallon rectangular, underground concrete tanks are also available for treatment or storage.

Each of the steel tanks is equipped with three horizontal, spiral heating coils set 18" from the bottom with a heating area of 1.65 sq.ft. per gallon of liquid, two heaters of 315 sq.ft. of heating area each, a transfer and circulating pump, two adjustable sprays, a water drain and tar header with valves spaced 2 feet apart. A continuous rotary strainer at the inlet of the heaters strains all material coming from the separators. (Figure II.)

The tar treatment procedure of boiling or heating batches in a processing tank for an extended period of time followed by a period of settling, after which the separated water is drawn off is not practiced at the plant.

In the method used, a layer or zone of water above the tar is maintained at all times. The wet tar, after heating to 220 to 240° F., is sprayed at a pressure of 20 to 40 pounds in the zone of water above the tar. This zone of water is held at a sufficient height to keep the spray immersed a minimum depth of one foot by controlling the removal of the separated water from the tank by means of the water drain header. The finished tar is pumped from the bottom of the tank, as required. Both the depth of the tar and water zones vary according to separator pumpings and tar and water withdrawals from the tank. The only limit of the height of the tar layer is that it must be kept a foot below the spray, so that at all times the wet tar is sprayed into the water.

The tar in the tank is further conditioned by reheating and spraying through a second spray. It can be taken from any level desired by use of the aforementioned header.

Additional heat treatment of the tar is accomplished by means of the steam coils in the bottom of the tank.

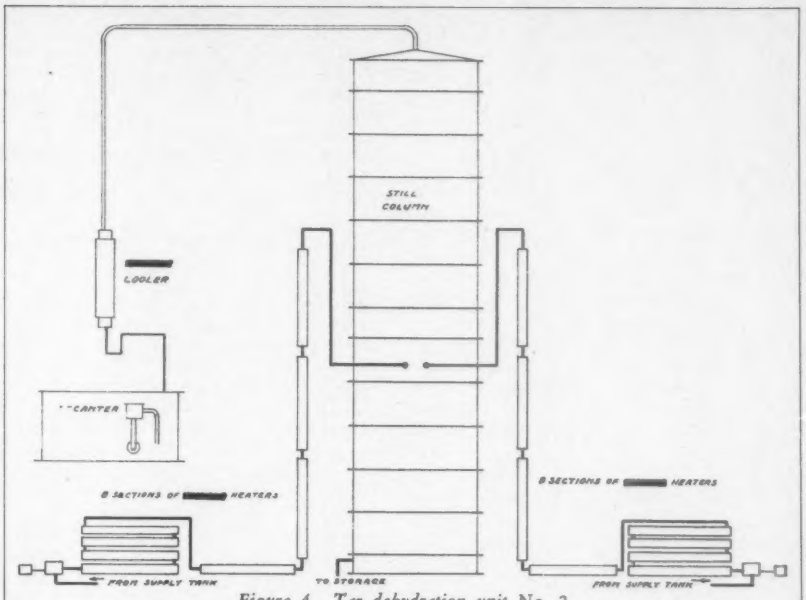


Figure 4. Tar dehydration unit No. 2

Segregation of tars is practised at the plant to avoid emulsion conditions and as an aid to processing. One treatment of the wet wash box tar reduces the water content sufficiently for boiler use, an average of 25% water in this tar meeting the demand satisfactorily. In processing this tar, it is worthy of mention that the procedure described has eliminated an exceedingly objectionable characteristic of the method employed previously; i.e., an excessively high viscosity tar. The light oil which previously was boiled off is kept in the tar and burner difficulties and clogging of the air passages of the checker flooring of the boilers have been stopped.

If storage demands permit, the condenser tar is processed twice in the manner described, two tanks being used in series. Being more economical in its steam requirements, two tanks for finished condenser tar are used whenever possible. One processing of the tar, however, is usually sufficient to reduce the water content within the capacity of the tar dehydration equipment. The average water content ranges from 10-15 per cent, depending upon load conditions.

The principle of passing wet tar through a layer of water has been utilized in the past to process an accumulation of high water tar in the underground, concrete tanks, which formerly were ammoniacal liquor storage tanks. The high water tar in these tanks was treated by simply pumping the material from the bottom, after heating, through orifices, and allowing the material to fall through a layer of water above the wet tar.

The plant has two dehydration units; one a redesigned light oil fractionating still (Figure III), the other a redesigned ammonia liquor still (Figure IV).

The light oil fractionating still designed

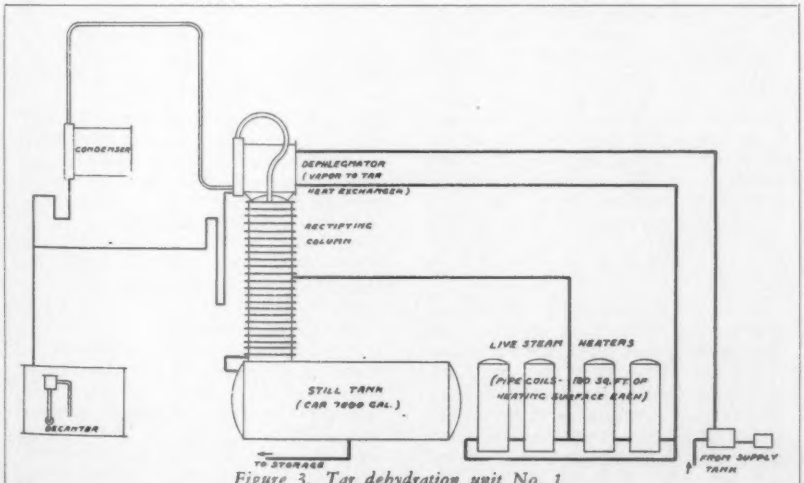


Figure 3. Tar dehydration unit No. 1

for distilling benzol, toluol and xylol from light oil was changed by connecting four spiral-coil high pressure steam heaters to the dephlegmator of the still column and connecting the vapor line to a condenser. A decanter for separating the light oil and water evaporated was provided. The heating coil in still tank was disconnected and vapor tubes of the column were plugged.

The tar is pumped from a supply tank around the vapor tubes of the dephlegmator which serve as a vapor to tar heat exchanger. The tar then passes through the four heaters arranged in series of two each in parallel and into the tenth section or practically the middle of the still column. The tar flows down into the still tank where another pump discharges it to the finished tar tank. The light oil and water are condensed and then separated in the decanter.

The changes to the ammonia liquor still amounted to connecting steam heaters to the column, disconnecting the steam supply into its base and providing the necessary pumps, condenser, and decanter as in the previously described unit. The heaters are in 16 sections, arranged in two parallel banks of 8 sections each. The sections are in series; 5 in a horizontal position followed by three vertical sections. The outlet of each bank is connected into the middle of the still column. Each bank has its individual pump.

Operation

Operation is the same as previously mentioned, either or both banks of heaters being used. The process of dehydration is continuous and as the units can be operated as conditions demand, the heaters of a unit are always run with steam supply at a maximum. An average temperature of the tar entering the column is 260° F. The variable controlling the dehydration is the rate of tar passing through the heaters. This rate is determined by periodic analysis for water content of the tar at the outlet pump. The capacity naturally depends upon the water content of the inlet tar, although on low water content tar, the pumps and condensers have limited the throughput.

These units have processed 1,930,000 gallons of tar during a period of a month from 7% inlet water to 0.4% in the finished tar.

This completes the description of the tar handling facilities and outline of the tar treatment of the plant which serve efficiently and economically to produce for sustained period over 90,000 gallons of finished tar per day. It is believed that the tar treatment process described has effected a substantial saving in steam consumption. Lest an impression be fostered that the design of the separators, their operation or the procedure for tar treatment be the sole cause for the successful outcome of tar handling, too much emphasis cannot be made that the efficacy of tar handling begins with and is highly dependent upon generator house operation.

The maintenance of the proper temperature and the establishment of the correct heat balance in the sets for the particular oil used is the foundation upon which the hopes and desires of the tar operator rest. Smooth, consistent operation of heavy oil tar treatment still is predicated as in the days of gas oil enrichment upon the successful and efficient handling of the oil in the generator house.

· · · HELPFUL HINTS · · ·

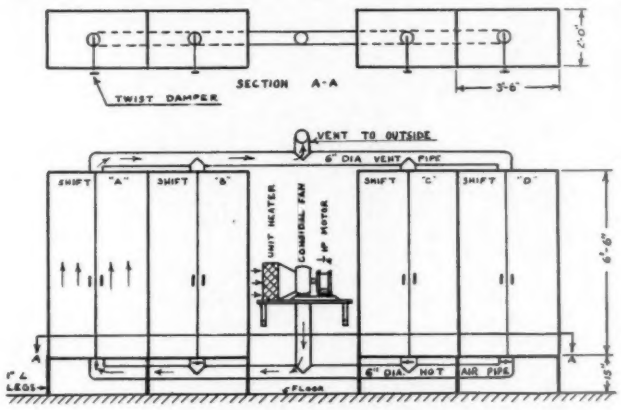


Diagram of clothes locker

CLOTHES DRIER

HERE is an inexpensive layout, that requires very little floor space, for drying men's work clothes submitted by E. C. Riplinger, Safety Engineer of the Seaboard Division of the Koppers Company, Kearny, N. J.

Hanging wet clothes about the locker room is unsightly and unsatisfactory for many other reasons. Overhead cages are also unsatisfactory because the clothes do not dry well in them and they present a hazard as well. No man likes to put on wet clothes at the beginning of the day and this problem was adequately solved as shown below.

The accompanying drawing illustrates a set of drying lockers which was installed about a year ago and are proving to be very satisfactory. The equipment consists of a small unit steam heater, a steam trap, a small centrifugal fan, a ¼ h.p. motor, 4 wardrobe type lockers—size 3'-6" wide x 2'-0" deep x 6'-6" high, standard 6" galvanized stove piping, and 4 standard twist type dampers. In operation, air is pulled through the unit heater by the fan and is conducted to the bottom of the four lockers. Any number of the four lockers may be used depending on the clothes to be dried.

The drawing shows the locker for "A" shift in use. The warm air passes up through the lockers around the wet clothes. A ¾" pipe at the top of the locker serves as a clothes pole from which clothes hangers may be hung. The air with the moisture it has picked up from the wet clothes passes out the top of locker and by means of a vent pipe is conducted to the outside. It is advisable to have a small screen placed on the floor of the locker over the air inlet to prevent clothes, i.e., socks, from falling down in the pipe. As a matter of convenience, extension rods should be supplied on all twist dampers.

Individual shift drying lockers were found to be desirable because with this arrangement the shift locker may be locked during the time the respective shift men are out of the locker building. Wet clothes will dry in the above mentioned equipment in less than three hours.

METHOD FOR THE RAPID AND ACCURATE DETERMINATION OF MOISTURE IN COKE SAMPLES

J. G. Sweeney, The Brooklyn Union Gas Company, Brooklyn, N. Y.

IN order to get accurate moisture determinations on coke, it has been the practice of this laboratory and many others to dry large samples without crushing. These samples run from 25 to 50 lbs. and the drying is done in galvanized tubs placed in a large steam-heated oven. The time element is one objection to this method as the drying usually takes at least overnight. It is desirable at times to get a moisture test run within an hour or two.

A quicker and almost as accurate a method was recently worked out at this laboratory. This method calls for a 6-lb. sample and the drying is complete in about an hour at a temperature of 220° F. With water gas, furnace or domestic sizes it is necessary to grind the sample to about ¼

inch top size and this can be done conveniently in a Sturtevant automatic sampler which is enclosed and which minimizes air drying. After mixing carefully, a 6-lb. sample is weighed in a galvanized tub 22" top diameter and then it is divided into three portions, each portion being placed into a separate tub. After drying an hour at 220° the three portions of coke are combined in the original tub and weighed back. The weighing is done on a platform scale sensitive to about .04 lb.

The ordinary sampling laboratory is equipped with a platform or equivalent type scale for weighing relatively heavy weights. This method permits the use of such a scale and still gives prompt and accurate results.

TANK HYDROGEN FOR TESTING CALORIMETERS

Waldo S. Hull, Central New York Power Corp., Utica, N. Y.

I NOTE in your February issue, under "Helpful Hints," a suggestion to use certain pre-mixed gases for Thomas Calorimeter testing.

I have found it very convenient to use a tank of C. P. hydrogen for periodic and quick checks on the Thomas Recording Calorimeter. After a calorimeter has been completely overhauled and air-ratio balanced, I test it with hydrogn through a regular generator outfit, then turn on the hydrogen from the tank. There may be a slight B.t.u. difference but assuming the Thomas is correct, after having checked several times with the standard Water Calorimeter, I record the value of the test cylinder of C.P. hydrogen and use this figure for all subsequent so-called field checks. Such a cylinder will last two or three years and comes in mighty handy when things start to go hay-wire with the B.t.u. control apparatus and a standard B.t.u. is desired at once.

NOTE: H. Kehmna of Koppers Co., Seaboard Division, has used this procedure for several years and later adopted the mixture of methane and hydrogen gases described in the February issue. The advantage of this over straight tank hydrogen is that it gives similar flame characteristics to that normally used in the calorimeter, burns the same amount of gas, and does not require changing the gears thus saving considerable time.

We want some "Helpful Hints" from you. Please send your contributions to H. J. Meredith, Chief Chemist, Koppers Company, Seaboard Division, Kearny, N. J.

Almost a fourth of the metal working equipment in all the factories of the United States is used by the automotive industry—and most of the automotive industry's heating jobs are gas jobs. Some customer—this automobile!

Schedule for Removal of Soil Corrosion Test Specimens

A SCHEDULE for the removal of soil corrosion test specimens this Fall has been announced by Lyman J. Briggs, director of the National Bureau of Standards. The removal of these specimens, which will be supervised by K. H. Logan, of the Underground Corrosion Section of the Bureau, will finish the work at many of the test sites.

Since many of the specimens have been buried for long periods, the appearance of the test sites and the corrosion products is of particular interest to technical men in the gas industry. Members of the American Gas Association are invited to be present at any of the test sites in which they are interested.

The following schedule is tentative and anyone desiring to witness the removal of specimens should notify K. H. Logan, National Bureau of Standards, Washington, D. C., who will inform him of any changes in the dates of removals.

Tentative Dates for the Removal of Soil Corrosion Specimens

Materials buried in 1922: Armco iron, Wrought iron, Bessemer steel, Open hearth steel, Copper bearing steel, Duriron, Fiber, DeLavaud cast iron, Pit cast iron, Lead.

Materials buried in 1924: Lead coated pipe, Galvanized pipe and sheet—3 kinds, Bitumen coated pipe—3 kinds, Brass attached to lead, brass or galvanized iron.

Materials buried in 1926: Copper pipe, Brass pipe.

The above named materials will be removed according to the following schedule. This will complete the tests at these sites.

Test Site Near	*Tentative Date for Removal of Specimens*
Alexandria, Va.	September 5
Boston, Mass.	September 14
Bunkie, La.	November 13
Camden, N. J.	September 8
Cincinnati, Ohio	September 22
Dallas, Texas	October 31
Davenport, Ia.	September 28
Jacksonville, Fla.	November 17
Kansas City, Mo.	September 29
Los Angeles, Calif.	October 12 and 13
Meridian, Miss.	November 7
Middleboro, Mass.	September 15
Milwaukee, Wis.	September 27
Oakland, Calif.	October 6
Piqua, Ohio	September 19
Salt Lake City	October 2
San Antonio	October 23
Seattle, Wash.	October 4
Springfield, Ohio	September 20

The following materials will be removed from the sites named below. This will complete the tests of these sites. Armco iron, wrought iron, Bessemer steel, "Monocast" iron, pit cast iron.

Test Site Near	*Tentative Date for Removal of Specimens*
Atlanta, Ga.	November 28
Charlotte, N. C.	November 29
Cincinnati	September 2
Houston, Texas	October 24
Macon, Ga.	November 22
Pensacola, Fla.	November 16
Phoenix, Ariz.	October 20
Raleigh, N. C.	December 4
Salisbury	October 20
Shreveport, La.	November 1
Tampa, Fla.	November 20
Vicksburg, Miss.	November 3

From the sites named below will be remover so-called corrosion resistant materials buried in 1932 and 1937. These include some of the commonly used pipe materials as well as a large variety of ferrous and non-ferrous alloys. About 15 kinds of non-bituminous pipe coatings will also be inspected. There are about 75 varieties of materials at these test sites. About 10 additional materials will be buried.

Test Site Near	*Tentative Date for Removal of Specimens*
Atlanta, Ga.	November 23
Baltimore, Md.	September 7
Beaumont, Tex.	October 25
Button Willow, Cal.	October 11
Charleston, S. C.	November 24
Kalamazoo, Mich.	September 25
Los Angeles	October 16
Meridian, Miss.	November 6
Milwaukee	September 26
New Orleans, La.	November 9
Paso Robles	October 9
Phoenix, Ariz.	October 19
Plymouth, Ohio	September 18

Jersey Central Merges with Six Companies

NEW JERSEY'S State Board of Public Utility Commissioners approved, July 14, the merger of six gas and electric companies with the Jersey Central Power & Light Co.

Companies merged with Jersey Central are Cape Island Gas Co., Boonton Gas Light & Improvement Co., Ocean Gas Co., New Jersey Gas & Electric Co., Cape May Gas Co. and Red Bank Gas Light Co.

In approving the consolidation the utility board stipulated that Jersey Central Power & Light must submit proof within 30 days of the surrender and cancellation of the outstanding stock of the other merging companies.

The name Jersey Central Power & Light Co. is retained for the merged concerns.

Laboratories

N. T. SELLMAN, *Chairman, Managing Committee*
R. M. CONNER, *Director*
F. O. SUFFRON, *Supervisor, Pacific Coast Branch*

A Method of Determining Surface Temperatures of Floor Furnaces

F. O. Suffron

AMERICAN Standard Approval Requirements for Central Heating Gas Appliances have for many years specified tests to be applied to floor furnaces to insure against excessive temperatures of floors and walls in contact with their exposed surfaces. Within the last few years the original conception of a floor furnace has changed materially.

Formerly this appliance was thought of as a heating device which was installed at sufficient distance from walls of the room to be heated to provide good air circulation. Cold air was drawn in around the perimeter and the heated air discharged through the center of a flat floor grille.

New-Type Furnace

More recently a type of floor furnace has been developed to be installed under a partition between two rooms, heated air being discharged into one or both through grilles set in the partition itself. With this construction the heated air thus passes through a hood or head which may become overheated as a result of the high temperature of the discharged air, unless proper precautions are taken to prevent excessive temperatures. The hood may also be installed in direct contact with wood partitions and as a matter of fact is usually confined so completely that little or no air circulation is available to reduce the temperature of such parts.

Considerable attention has been devoted to the details of the test procedure which should be followed in examination of the type of furnace under discussion to obtain the best results. It has been customary in the past to use accurate mercury thermometers with the bulb placed in contact with the surface of furnace parts which may be installed in contact with combustible material. It has been observed, however, that many factors tended to influence the results obtained.

For example, the intimacy of contact may be influenced by the force with which the thermometer is placed against the surface while the area of contact may also be influenced by the type of surface. In addition, temperature of the air surrounding that portion of the thermometer stem exposed to atmospheric conditions may vary, thereby affecting the accuracy of results. These considerations are all important and have a definite bearing on the accuracy of resulting measurements. After careful study it was felt, therefore, that more consistent and reliable results could be obtained through the use of sensitive thermocouples properly installed.

With this thought in mind an apparatus was designed and constructed at the Pacific Coast Branch of the American Gas Association Testing Laboratories which would enclose the heads of single and dual register floor furnaces as completely as possible in order that the conditions found in actual field installations might be duplicated. This apparatus was constructed to incorporate a large number of thermocouples properly distributed over and in intimate contact with the surfaces of such heads, and connected through suitable switching mechanisms to insure rapid and accurate temperature measurements.

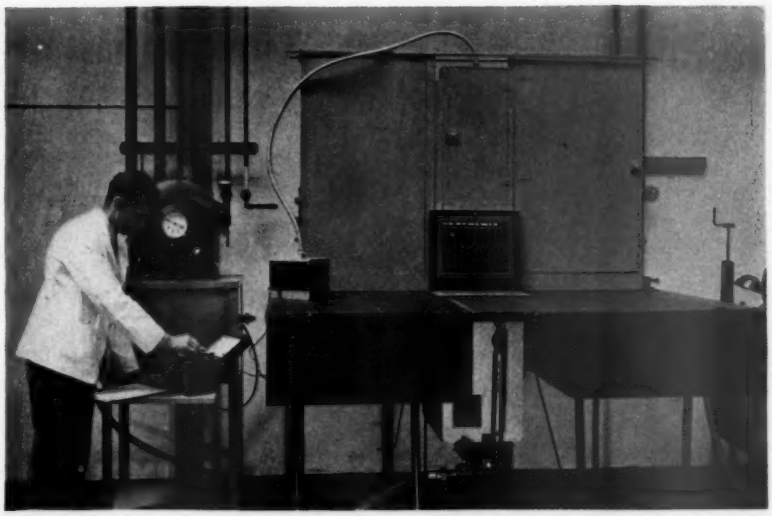


Exhibit A. Test assembly for determining surface temperatures on single or dual register heads for use on floor furnaces

By F. O. SUFFRON
American Gas Association Testing Laboratories

The floor furnace proper is installed in an adjustable platform designed to include joists and accompanying floor surface simulating an actual field installation. The ends and top of single and dual register heads which project above the floor are encased in sections of typical partitions 5¼ in. thick, one for each vertical face of the head and one to be installed between the two end partition sections and resting on the top of the head. These sections of partitions are placed in contact with the surfaces of the single or dual register heads in such a way that there is a minimum of air circulation which would tend to lower the apparent surface temperature of these parts. Exhibit "A" shows the arrangement of apparatus for the conduct of surface temperature tests on single or dual register heads of floor furnaces.

Thermocouples are permanently installed in the faces of the partition sections which come in contact with the floor furnace heads. Thermocouples themselves are made up of No. 24 gage double cotton-covered iron and constantan wire. The ends of each

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wire are further insulated by insertion in short lengths of radio spaghetti, which covers that portion of the thermocouple extending through the boards forming the partition section. The junction of the thermocouple is bent out and held in position by short lengths of asbestos tubing stapled to the partition face under the thermocouple, and forming a backing for the bead junction. This method is used to insure a springy, intimate contact with the surface of the floor furnace head. Exhibit "B" shows the arrangement of thermocouples in ends of partition sections.

Thermocouple heads are approximately 0.05 in. in diameter or about twice the bead wire diameter which is in line with recommended practices. It is, of course, desirable to obtain as much surface contact as possible when using thermocouples for such purposes in order that the maximum heat transfer may take place. Likewise small gage thermocouple wire is usually employed to reduce heat loss from the head through radiation and conduction.

It would seem highly desirable, therefore, to increase the surface contact and at the same time maintain the present 24 gage wire. For the particular application under discussion where the air circulation around the heads is restricted to the point where the temperature surrounding the thermocouple approaches that of the surface it is probable that the error introduced by a small surface contact is not great. It is, however, planned to study this detail further and, if found necessary, to employ a surface contact type junction.

A selective type of switching mechanism has been incorporated to accommodate rapid change from one thermocouple to another. An indicating type of potentiometer is used to measure the e.m.f. developed by the thermocouples. Multiple contact double pole radio switches are used to connect each thermocouple circuit with the potentiometer. Each switch has a capacity of twenty-three circuits and is used to control the thermocouples on a single vertical row. Thus, with three switches, as employed in the present apparatus, a total of three rows or sixty-nine thermocouples can be accommodated. Each switch also has a main circuit, which, connected to a double pole telephone jack, is used for connecting the potentiometer to the switch.

The switches themselves are not constructed of the same materials used in the balance of the thermocouple circuit and several dissimilar metal junctions are formed in the switches and jacks. These junctions, however, are encased in a chamber where the temperature remains practically constant. Provided the temperature of all parts of the switch remain the same there will be no effect on the temperature reading. All leads both to and from the switches and the leads which connect the potentiometer are of the same material as the thermocouple. It is also important that the same material be used continuously on one side of the circuit and that the two metals do not at any time become transposed.

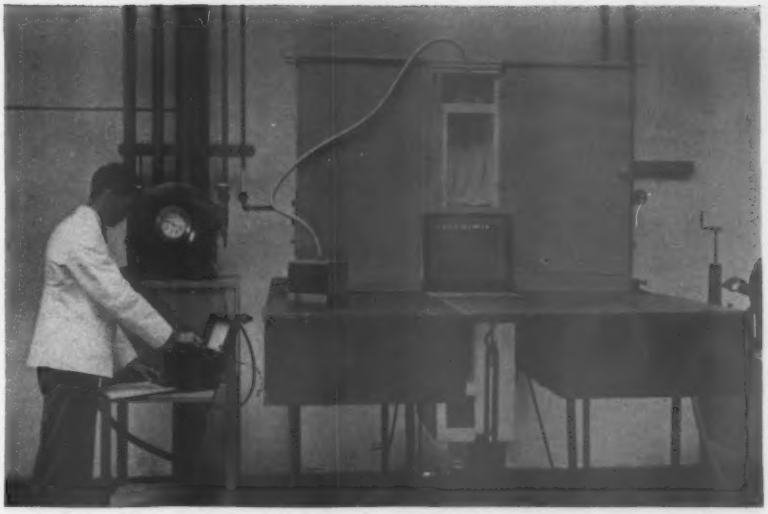

Exhibit C. Arrangement of thermocouples in the center partition

The center partition section which is used to measure temperatures at the top of the head contains thermocouples spaced approximately 1 in. apart, terminating at a junction near the top of the box. Exhibit "C" shows the arrangement of the thermocouples in the center partitions. From this junction, leads of the same material extend through a section of flexible metal cable to a switch box constructed along the same general lines as the switching mechanism for the vertical side boards. Additional boards of varying widths, each provided with thermocouples whose leads could be plugged into the main switches, were also constructed, and polarized radio jacks provided in the upper face for connecting these thermocouples to the switch box.

Removable Sections

To insure that the thermocouples on the vertical partition sections will reach all portions of the head, removable board sections are provided at the bottom in such a manner that the face containing the thermocouples may be extended below the floor surface, as required. The entire assembly is securely installed around the head of the floor furnace. For this purpose a long threaded bolt is provided at each end of the partition section which is threaded through a section of angle iron securely fastened to the floor of the apparatus. Screwing up on these bolts presses the sections together and against the faces of the floor furnace head. A yoke is also provided for attachment near the top of the section to insure that intimate contact is maintained between the thermocouples and floor furnace head. Doors are provided in each partition section for access to the switches, thermocouples, and wiring.

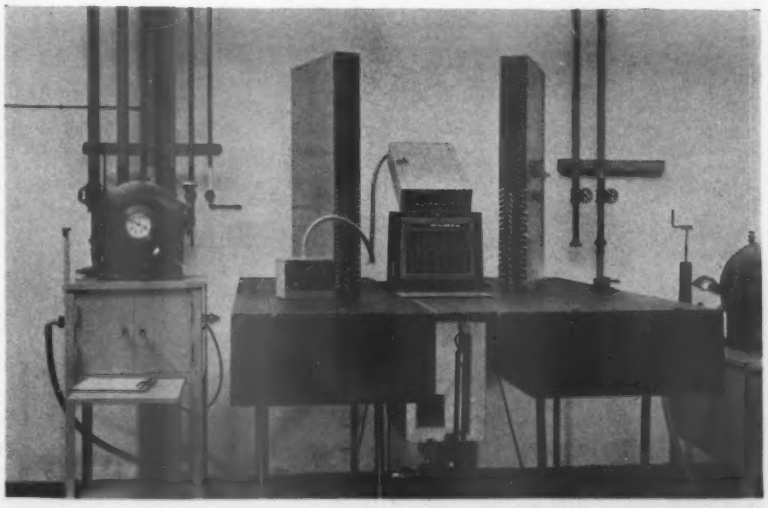

Exhibit B. Arrangement of thermocouples in ends of partition sections

In the conduct of a test for the determination of surface temperatures, the floor furnace is mounted in an adjustable platform representing a section of floor. This equipment is composed of two similar floor sections consisting of 2 in. by 12 in. floor joists surmounted by a typical wooden floor. The floor furnace is suspended between these sections with a joist in contact with each side of the furnace. The open ends are then filled in to form a continuous floor area extending approximately 30 in. from the furnace in all directions so that normal operating conditions may be reproduced. The partition sections are then secured in position.

The furnace is adjusted to burn the manufacturer's hourly B.t.u. input at normal pressure and the pressure at the inlet of the regulator then increased to 1.5 normal pressure, after which the furnace is allowed to operate until temperature equilibrium is reached. With the potentiometer plugged into the jack connecting it to the proper switch, readings are successively and rapidly taken of each thermocouple in contact with the furnace head. In order for the tests to be satisfactory the temperatures indicated must in no case be more than 90° F. above that of the room.

A. G. A. Laboratories' Staff Represents Many Technical Schools

STARTING with only seven engineers on their staff when the American Gas Association Testing Laboratories were organized in 1925, the number has grown until it now totals 68, the largest in the history of the organization. This increase reflects the progress of the Laboratories and their wide acceptance by the gas industry and the public throughout the United States and Canada. After 14 years, 95% of all domestic gas appliances sold are tested and approved by the Laboratories, either at Cleveland or at the Pacific Coast Branch in Los Angeles.

The personnel of the Laboratories is made up of engineers coming from universities and colleges located from coast to coast. Twenty-five universities and colleges are represented. The Eastern schools include Amherst College, Johns Hopkins University, Massachusetts Institute of Technology, Newark College of Engineering, New York University, and University of Pennsylvania; the West is represented by Oregon State College, Stanford University, California Institute of Technology, University of California, and University of Southern California; the South by Georgia School of Technology; and Canada by the University of Toronto.

A large group of colleges located centrally is represented by Case School of Applied Science, Carnegie Institute of Technology, Heidelberg College, Kansas State College of Applied Science and Agriculture, Ohio Northern University, Ohio State University, Purdue University, Tri-State College, University of Cincinnati, University of Illinois, University of Michigan, and the University of Wisconsin. Case School of Applied Science, located in Cleveland, has the largest representation with fourteen engineers on the staff.

At the present time no university or college offers a course which is directly applicable to the work done at the Laboratories. However, in view of the wide variety of requirements with which compliance is necessary, the engineers' college training in the various fields affords them a satisfactory background for this work. An analysis of the various degrees which were earned by the present personnel shows 22 holders of degrees in mechanical engineering, 15 in chemical engineering, and 10 in electrical engineering. Twenty-one have degrees in other scientific fields, mainly physics, chemistry, and metallurgy. In addition, a number of the engineers have post graduate credits and 8 of the staff have advanced degrees, including one Doctorate of Philosophy in Industrial Chemistry.

Tests Made of Boltless Pipe Couplings

WITHIN the last few years, a number of couplings of the so-called "boltless" type have been developed and employed in the installation of steel pipe in commonly used sizes for underground gas services. Due to the increased use of these couplings and certain advantages which they appeared to possess, the Subcommittee on Pipe Joints and Pipe Materials of the Distribution Committee felt it desirable to obtain essential facts in regard to their performance based on actual tests. It was considered that the information secured could then be employed in the development of suitable specifications to cover such couplings.

Considerable preliminary work on this subject was conducted by a member utility company about a year ago and results indicated that these couplings, employing gaskets of the conventional type, were capable of withstanding leakage under extreme conditions such as might be produced by underground movements. Special testing apparatus was constructed which permitted the application of repeated longitudinal movements through a specified distance while the couplings were maintained under air pressure. As a check on the results obtained and to secure additional data along similar lines, the Laboratories were recently requested by the subcommittee to undertake further tests on boltless couplings in selected sizes.

Considerable discussion took place on the test procedure to be employed during the recent distribution conference held in Chicago and plans were concluded at a meeting of the Subcommittee on Pipe Joints and Pipe Materials for the conduct of the present work. These call for the selection of couplings in the ¾ in., ½ in., and 2 in. sizes as representative of this range and their subjection to three series of tests. The first will consist of repeated longitudinal movements using the special equipment formerly designed for that purpose. The second will consist in applying lateral deflections of the pipe with the coupling maintained at a fixed position up to the point where a metal binding between the pipe and coupling takes place. A third series of tests will be carried out using a testing machine in which the coupling will be subjected to a crushing load to determine the point at which leakage occurs.

In all cases the couplings will be made up on the pipe specimens following the installation procedure recommended by the respective manufacturers. The test specimens will then be maintained under an internal pressure of 100 lbs. per square inch throughout all the tests.

Samples have been obtained and the necessary equipment mounted for the carrying out of the work outlined. The information developed will be made available to the subcommittee supervising the project for its review and decision as to the necessity for extending the project further. It is believed that at the completion of the work outlined, specifications can be prepared which will insure the ability of couplings of this type to successfully withstand the conditions which they are often called upon to meet in service.

Booklet Urges Better Heat Control

AN attractive 24-page illustrated booklet, "Hidden Losses in Your Kitchen and How to Stop Them," directed to restaurants, hotels and other institutions, has just been released by Robertshaw Thermostat Co., Youngwood, Pa. The booklet emphasizes the savings made possible by the installation of up-to-date gas-fired equipment, with particular emphasis on proper heat control.

GAS HYDRATES

(Continued from page 303)

pipe-line temperature meant that in this particular line the pressure had to be dropped below 125 pounds per square inch, at 35° F., instead of 205 pounds per square inch, which would have been adequate at 42° F. to assure the immediate decomposition of the hydrates.

Heat is absorbed in the decomposition of hydrates. Accordingly, where

a considerable mass of hydrates has accumulated in the line, the decomposition of these hydrates upon reduction of pressure may result in lowering of their temperature to 32° F. Under these conditions, further decomposition of the hydrates would be accompanied by the conversion of the hydrates to water ice. This phenomenon would account for the presence of ice that frequently is blown from a pipe line when it is depressured and blown.

If the pressure of a pipe line is lowered by reducing the rate of gas input, it is not likely that the temperature of the line will be reduced as much as when the section of line is isolated and depressured. The first method usually requires a longer period to effect the same lowering of pressure, and this allows more time for heat transfer from the ground to the pipe line. Moreover, by keeping the line in operation, the flowing gas will supply at least part of the heat needed to decompose the hydrates.

Regardless of the method used to decompose the hydrates, it should always be borne in mind that the water resulting therefrom should be removed from the pipe line as promptly as possible. Otherwise when the line is returned to service and the normal conditions of temperature and pressure are re-established, the water again will be converted into hydrates with possible plugging of the line.

Dehydration

Dehydration of the natural gas seems to offer the best assurance of freedom from hydrate difficulties. Where circumstances will permit, a dehydration plant is recommended. There are, of course, many situations where this means of prevention is not feasible. To cope with these conditions, some of the other methods described briefly in this paper may be used advantageously. A very simple type of dehydration apparatus that may be placed at individual gas wells or at other convenient points in the gas system has been used successfully by The Montana Power Co. in its field operations at Cut Bank, Mont. This equipment is described in a paper by Smith,[7] and more extensively in a paper by Hardie.[8]

SUMMARY

In summary, methods that have been mentioned for dealing with gas hydrates in the field may be grouped into five classes: (1) Application of heat; (2) use of alcohol to lower the hydrate freezing point or to decompose hydrates present in the system; (3) injection of ammonia into the gas stream, either as a continuous procedure or intermittently to decompose hydrates that may have formed in the line; (4) "depressuring" of the pipe line; and (5) use of dehydration equipment of simple design suitable for field service.

The Bureau is continuing its study of gas hydrates and their relation to natural gas pipe lines. A considerable amount of laboratory work remains unfinished; the correlation of these findings to the field problems must be continued.

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[7] Smith, R. D., Dehydration on Montana Power Transmission Lines: Gas Age, vol. 80, no. 3, (August 5, 1937) pp. 38-40.

[8] Hardie, M. A., Jr., The Freezing of Regulators and Its Prevention: Technical Section, Am. Gas Assoc. 1937.

Cooperative Meter Studies Praised

HIGH praise for the work of the Special Meter Committees of the American Gas Association and the American Society of Mechanical Engineers was heard at the annual convention of the National District Heating Association held in New York, June 27-30, when the report the Meters and Accessories Committee headed by W. C. Wagner, of the Philadelphia Electric Company, was presented.

In referring to the benefits obtained from the joint association research on fluid flow measurements, Chairman Wagner said: "Our association is very fortunate because of the work that has been accomplished by the American Gas Association and the American Society of Mechanical Engineers on fluid flow measurement. . . . ."

Urging continuance of his committee's work, he said: "Basing our opinion upon the good work over the years of the American Gas Association, which has furnished us an ideal pattern, we strongly recommend that the work of the committee for the next year shall include conferences between manufacturers and users, to develop a general specification for steam meter installation and performance that would be of mutual advantage and protection, and which could be used as a reliable guide for regulatory bodies where existing regulations should be revised, or where regulations are expected to be inaugurated."

Gas Turbines Practical for Power Generation

A NEW principle of power production, the gas turbine, has reached the stage where it can be used for practical purposes, according to recent reports. It represents realization of an old dream of getting useful power from the direct expansion of burning gases without the bother of cylinders and pistons, fuel injection and even cooling water. It is entirely rotary in its action.

It is reported that more than a dozen gas turbines are now in actual use or being built here and in Europe. A large gas turbine is being built for emergency use at Neuchatel, Switzerland. It will be installed in a rock tunnel where bombs cannot hit it. Its small size and use of air for cooling make this practical. A 2000 horsepower gas turbine locomotive only 60 feet long is being constructed for the Swiss Federal Railroad.

Gas turbines in this country have been in use for over two years, running on waste gases from oil refining with such success that more have been ordered for such use. They are being built in America by Allis Chalmers Manufacturing Co., Milwaukee.

Dr. Adolph Meyer, director of engineering of the Brown Boveri Co. in Basle, Switzerland, says in the matter of cost the gas turbine makes a much better showing than any other type of power unit. If a Diesel installation of a given power size is taken as unity, the steam turbine installation will cost one-half and the gas turbine one-third, according to Dr. Meyer. No one expects, he points out, that the gas turbine will immediately replace steam turbines or internal combustion engines as the principal source of electrical power. It is too early to predict what trend the development will take.

Harold Hone Dies

HAROLD HONE, gas engineer for the Consolidated Edison Company at the New York World's Fair, and last male descendant of Philip Hone, Mayor of New York from 1824 to 1826, died July 8. He was fifty-seven years old.

A native of Hollywood, N. J., he was graduated from Yale University in 1904 and began his business career with the Knickerbocker Trust Company. He had been with the Consolidated Gas and Consolidated Edison Companies during the last twenty-eight years. He was a member of the American Gas Association and of the Society of the Cincinnati.

New England Utilities Change Hands

THE New England Gas & Electric Association, owner of the Worcester Gas Light Co., has purchased the Milford Gas Light Co. and the Marlboro-Hudson Gas Co., according to R. J. Rutherford, vice-president of the Worcester Gas Light Co. The two companies added to the New England Gas & Electric System will be operated from Worcester, Mr. Rutherford having been elected a vice-president of both companies and Arthur C. Frey, general manager of the Worcester company, general manager of the two new additions.

The purchase was made from the New England Power Association at a price not made public.

The two companies add about 6300 customers, in seven communities, to those already served from the Worcester plant.

The Worcester Gas Light Co. has sold gas wholesale to the Milford and the Marlboro-Hudson companies for years. The change in ownership will not necessitate any changes in operations or require any construction. It is probable, said Mr. Rutherford, that the only change will be the opening of stores for the sale of appliances in Milford and Marlboro.

The Milford Gas Light Co. serves Milford and Hopedale. The Marlboro-Hudson Co. serves Marlboro, Hudson, Stow, Maynard and Southboro.

Gas, the most widely accepted fuel in the 48 States, is a medium of magnitude and wonder at the New York World's Fair, since it is responsible for the energy of service in cooking, water heating and space heating, and for the most unique creative effects in spectacles and illumination at the Fair grounds.

Distribution of Gas and Electric Energy

FEW people realize the importance of the gas industry in the domestic and industrial life of the nation through the distribution of energy in the form of manufactured and natural gas.

The energy distributed by the gas industry in the United States is greatly in excess of the energy distributed by the electric industry based upon converting the M cu.ft. and kw.hr. figures into British Thermal units.

During 1938 the energy sold in the form of gas amounted to approximately 1398 trillion B.t.u. or more than four times the total electric sales of 319 trillion B.t.u.

Much publicity has been given to the energy available from the TVA hydroelectric power development, where the present installed capacity is 420,000 kw. and the ultimate installed capacity is estimated at 1,400,000 kw. The estimated marketable energy available from this ultimate development is approximately 26 trillion B.t.u. annually, which is only 1/9th of the energy marketed by one of the larger natural gas systems of the country.

Over 50% of the total gas sendout in 1938 was for industrial purposes, which is not competitive with electricity, such as boiler fuel, cement and lime kilns, oil refineries, etc.

Assuming relative efficiencies in the utilization of energy for household purposes in the ratio of two or three to one in favor of electric energy, still leaves a very wide margin in favor of the gas industry in the amount of energy utilized as compared to the electric industry.

Why Industry Knows About Gas

IF all the best advertising, publicity and sales promotional men in all industrial fields were laid end-to-end, you'd very nearly have the complete roster of the National Industrial Advertisers Association and its 18 district chapters—or leastwise we've so believed for a long time. And last month this was proved when "Industrial Marketing" finally convinced the Board of Directors of the N.I.A.A. that, for the first time, it should permit publication of its complete membership list.

Being one of that membership we waded through page after page of names with growing satisfaction—until, all of a sudden, we realized that the representation of industrial gas and gas equipment men was something to brag about. Who says the non-residential gas fraternity isn't up to the minute in making the most of its advertising, publicity and sales promotional money? Look how many good industrial gas and gas equipment men we found in the N.I.A.A.—2 per cent of the entire membership:

American Gas Association (Harry W. Smith, Jr., Dir. Ind'l Publicity), American Gas Furnace Co. (Elmer C. Cook, Adv. Mgr.), Bryant Heater Co. (Arnold E. Schwarz, Sales Pro. & Adv. Mgr.), Combustion Utilities, Inc. (J. C. Breckenridge, Pres.), Dresser Mfg. Co. (O. M. Anderson, Adv. Mgr., and D. B. McWilliams), Electric Furnace Co. (A. E. Wright, Adv. Mgr.), Hotstream Heater Co. (O. A. Reiter, Sales Pro. & Adv. Mgr.), Ingersoll-Rand Co. (A. W. Loomis, Div. Adv. Mgr., and Lynwood H. Geyer), Ketchum MacLeod & Grove, Inc. (Ernest J. Giles, Vice Pres., and Robert L. Forsythe, Jr., Prod. Mgr.), Kewaunee Mfg. Co. (C. G. Campbell, Pres.), Minneapolis-Honeywell Regulator Co. (W. H. Evans, Asst. Gen. Mgr.), National Radiator Corp. (George B. Varner), Robbins Publishing Co. (Alfred E. Lindquist, Vice Pres., and Merton C. Robbins, Jr., Secretary), Roots-Connersville Blower Corp. (B. C. O'Brien, Vice Pres.), Ruud Mfg. Co. (Malcolm M. Scott), Surface Combustion Corp. (L. C. Kerrick, Dir. of Publicity, and Ralph Louis Towne, Sales Pro. Mgr.), Waukesha Motor Co. (Prescott C. Ritchie, Adv. Mgr., and Richard Harrison, Asst. Adv. Mgr.), Worthington Pump & Machinery Corp. (Frederick A. Pope, Mgr. Adv. & Publicity).

Personnel Service

SERVICES OFFERED

Engineer, superintendent, **valuation,** manager—graduate engineer with broad experience in operation and construction of works and distribution; design, surveys, estimates and procurement for plants including byproduct recovery. Recent experience in valuation of complete gas and other utilities; reproduction, original cost and property records; inventory pricing and cost analysis. **1293.**

Experienced **factory sales representative** desires connection in that capacity, preferably in the Southern States. Familiar with cooking, water heating, refrigeration, space heating and miscellaneous appliances. Has extensive following among utilities, plumbing jobbers, food service equipment houses, hardware, furniture and department stores and major appliance dealers. **1294.**

Industrial Sales Engineer, college graduate, seven years' operating experience, seven years' sales experience with large utility. Familiar with all phases industrial and commercial sales. Will consider public utility connection or equipment manufacturer connection in line allied to gas industry. Married (40). **1295.**

As sales manager, **salesman,** purchasing agent, or **factory representative.** Twenty years' experience in practically every branch of the business, have been connected with three of the largest gas companies in greater New York. Excellent record. **1296.**

Secretary-Executive Assistant, fifteen years' diversified experience in advertising, personnel, purchasing, travel, office and departmental management. Excellent correspondent. Nine years with large gas and electric utility in various supervisory capacities. For past six years manager of large stenographic department. Gregg shorthand writer. Inexhaustible worker. Imaginative. Personality. Go anywhere. **1297.**

SERVICES OFFERED

Engineer now in charge of **air-conditioning** and heavy duty equipment department of small utility wishes connection with larger utility company. Has outstanding record for successful installations and load building. Also capable of taking charge of personnel training and activities. **1298.**

Water Heater **Manufacturers Representative** with broad experience, excellent sales record, references, and utility following. At present employed, offers his services to water heater manufacturer or utility as sales manager or supervisor of their water heating department. **1299.**

Engineering utilization consultant—Experienced with low pressure gas combustion design; practical, economical and modern direction of central house heating and air conditioning product design; also sales promotion. Well versed in A. G. A. Laboratory approval requirements. Will accept work as temporary consultant or permanent position. Registered Professional Engineer, State of New York. **1300.**

College Graduate with 14 years' experience in **manufactured gas** industry desires employment. Familiar with production and distribution, both coal and water gas plants, and the management of small properties. Excellent references. Married, (38). **1301.**

Graduate engineer. B.S. Mechanical Engineering 1938; Master of Engineering 1939. A. G. A. Fellowship 1938-39. Pipeline and compressor experience. Age 29, Married. **1302.**

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